Playing With People's Lives

How city-builder games portray the public and their role in the decision-making process

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Abstract –

City-builder computer games are an integral part of the city planning profession. Educators structure lessons around playtime to introduce planning concepts, professionals use the games as tools of visualization and public outreach, and the software of planners and decision-makers often takes inspiration from the genre. For the public, city-builders are a source of insight into what planners do, and the digital city's residents show players what role they play in the urban decision-making process. However, criticisms persist through decades of literature from professionals and educators alike but are rarely explored in depth. Published research also ignores the genre's diverse offerings in favor of focusing on the bestseller of the moment.

This project explores how the public is presented in city-builder games, as individuals and as groups, the role the city plays in their lives, and their ability to express their opinions and participate in the process of planning and governance. To more-broadly evaluate the genre as it exists today, two industry-leading titles receiving the greatest attention by planners, SimCity and Cities: Skylines, were matched up with two less-conventional games with their own unique takes on the genre, Tropico 5 and Urban Empire.

Several issues in these games' portrayals emerged. The games evaluated typically offered a flawed range of options for dissent with little variety or authority, do little to address social issues and disempowered groups, and poorly portray residents as developed characters. Tropico 5 was an exception to every one of these conclusions, while Urban Empire distinguished itself often as well. The two poorest showings belong to the two games used most often by planners, SimCity and Cities: Skylines. This implies that the planning profession must better educate itself on the full range of games available, a need to take a similar approach to these games as with books published for a general audience, and the ample opportunity for more research in this crucial but neglected facet of planning.

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Introduction

It was in 1999 that I played my first city-builder game, SimCity 2000 (Maxis, 1993). By then I had become an avid gamer and had moved from just my Nintendo to playing PC games as well, which offered access to genres and franchises that I had never had the chance to play. Already a shameless nerd with a fascination for how the world around me worked and having grown up in a quiet suburb of a smaller city, the idea of exploring the inner workings of vast cities of millions of residents made city-builder games a natural fit. By this time, the game's sequel had been released, and SimCity 2000 could be found in clearance bins, putting it within the budget that a 9-year-old's allowance afforded.

While I may have been too young to fully grasp the game and spent more time ruining premade cities than helming my own towards prosperity, I was absorbed by the game's complexity. The relationship between land use, infrastructure, transportation, services, and alien abductions—SimCity is still a game, after all, with a wry sense of humor—was nuanced and required the type of stubborn and relentless trial-and-error that is part of a young mind's skillset. This experimentation was made possible by a depth of control that was staggering to a gamer not far removed from the running and jumping of a Mario game. As a player, that degree of power that the player wielded was never questioned; if anything, there was comfort in thinking that even a massive metropolis was quantifiable, governed by data and tidy causal relationships.

The irony of all of this is not lost on me today. Even in an era of big data, the ideals of the planning profession are decades removed from such a technocratic view of the city. The level of control that a game like SimCity provided proved to be only possible within the realm of such games. When viewed through a democratic lens, the player's ability to bulldoze houses and build highways through residential neighborhoods with a click of the mouse seems autocratic, reminiscent of some of the most disgraceful moments in city planning's history. And yet, despite these issues, whenever I am asked what

a planner does, I often answer that it is 'just like SimCity, but in real life'. The conversations I have had with peers and professors while writing this thesis has revealed that I am not alone in resorting to that comparison. It would seem that planning and the games that portray it are inseparable.

City planning and gaming have enjoyed a close relationship for many decades. From when gaming methods were used to prepare planners in the 1960s, to inspiration from computerized planning models leading to the birth of the city-builder computer game genre in the late 1980s, and up to more recent adoption of those games in planning practice and education today, games and planners both have received benefits from each other throughout their modern histories. City-builder games now play a role in the classroom, at planning events, and in society overall, serving as a far-reaching cultural touchstone to a public who generally have little interaction with the planning profession.

Spearheaded mainly by the work of educators, the body of literature on planning and the games that emulate it has been growing. The occasional detractor aside, city-builder games have been met with praise from the planning field. However, even the most positive articles can include some reservations over certain aspects of the game in question. While these concerns cover many facets of titles in the genre, including urban design (Lobo, 2005) and the lack of history in their cities (Gaber, 2007), several of them center around the topic of the player-as-player's power (Kolson, 1996; Gaber, 2007), the failure to address social concerns (Kolson, 1996; Gaber 2007), and decision-making being driven solely by data (Lobo, 2005; Gaber, 2007). However, discussion rarely goes beyond naming these issues and cautioning educators to address them in lectures accompanying game-based lessons. If this is such a pervasive problem in the games that planners are using, it deserves a closer look.

To do this, this project aims to provide answers to a question that encapsulates these recurring concerns: How do city-builder games represent the public, its role in the city, and its capacity to affect change? Four games in the genre, comprised of the two traditional foci of attention and two games with

different approaches to managing a city's growth and operation, were selected to undergo a Critical Inventory. This method clearly defines what elements are being searched for in each game and makes observations of all instances of those defined elements. To provide some degree of objectivity, those elements must be explicitly present, and interpretation is saved for discussion afterwards.

With this information gathered, comparisons can be drawn, and results can be interpreted through established planning concepts where possible. I have come to four conclusions:

1. City-builder games commonly offer their residents a flawed range of options for dissent.
2. City-builder games are inconsistent from title to title in offering their residents effective methods of engaging in the planning process.
3. City-builder games typically do little to feature disadvantaged groups and social issues.
4. Most city-builder games fail to portray their residents as complex, developed individuals.

While these answers are critical of the games as designed, I conclude that this highlights the need for planners to engage more critically with city-builder games. Given their role in how planning is portrayed to both mass audiences and students in the field, these games should be afforded a status akin to books about planning topics that find an audience well beyond the professional field, like Howard Kunstler's (1993) classic *The Geography of Nowhere* or Robert Caro's (1975) *The Power Broker*. This means more planners should at least familiarize themselves with them if not play them, scholarly reviews of more titles should be written and published, and more research should be done investigating their inspirations, assumptions, and influence. Educators using these games should be especially familiar with their games of choice, as well as alternatives, and should write more about how they handle discussion addressing the faults of these games when seeking publication. Developers should seek out planners for advice on how to better address the realities of modern planning, rather than perpetuating its technocratic past.

Rather than steer planners away from these games entirely, this project should provide impetus to better understand them. The benefits that city-builder games provide the planning profession are long established; a closer and well-informed relationship would only make those benefits even greater.

1 – How computer games are relevant to planning

City-builder computer games are an interpretation of key elements of the practice of city planning. In writing about SimCity 2000 for the journal *Political Science & Politics*, Kenneth Kolson (1996), explains that "the point of a simulation is to duplicate, by massive and virtually instantaneous numbers crunching, the real world of urban politics in which land-use decisions are taken." (p. 43) By stripping complex systems and situations down to developer-chosen key variables, and creating an accessible, engaging, and entertaining, way for people to interact with those variables, both professionals and general audiences can gain insight and practice in concepts that would be difficult to rehearse in a practical way in real life.

Games and city planning share a close and enduring bond that has shown up in several ways over the past century. The profession has developed alongside gaming, with an early and significant intersection occurring in the mid-20th century: As planning in the United States developed into a distinct professionalized practice with its own scholarly theories and concepts, games transitioned from tools of military simulation to methods of building experience in civic decision-making. A second important and lasting intersection of planning and gaming intersected in the final decades of the 20th century, as computer gaming became a hobby, and software developers began to produce city-builder games for the public. At that point, planners began to see these games as teaching aids, as methods of public engagement, and occasionally as targets of criticism. The relationship between gaming and planning is multifaceted and multidirectional, and with the digitalization of data, many tools of civic decision making, from urban dashboards to GIS software, have begun to resemble games. Beyond the reach of the relatively small profession of planning, these games also became cultural touchstones, the public's window into the planner's office.

It is because of this surprisingly complex and long-lasting connection between planning and gaming that a closer inspection is called for. By better understanding the content of the genre's top titles, planners can better understand what their students might be learning from them, what public engagement through these games might communicate about the field, and what ideas frequent players can internalize about a field that lacks much presence in other media.

This understanding is critical. Even as they use these games in their classroom, instructors writing on their experience often voice the same concerns that critics in the profession do. With the planning field's evolution and reckoning with its past, its values have shifted, its metrics of success have changed, and its outreach has grown. Whether these changes have been reflected in city-builder games, or if the critical themes from the literature suggest that these changes have been left out, is worthy of investigation.

Gaming's Path to City Planning

The history of gaming as a professional tool often starts with the wargaming techniques developed for the military in the interwar period. Peter Perla and Ed McGrady (2011), from the Center for Naval Analyses, give the example of naval wargaming preparing a generation of commanders for victory in World War II as a successful instance of gaming being a powerful teacher. "Games," they write, "draw players into both participating in and constructing their narratives; they literally place the players inside the narratives." (p. 113) The authors continue to explain that the level of engagement that gaming provides forces players to be responsible for their decisions and lets them experience the consequences, whether good or bad (Perla & McGrady, 2011).

In a retrospective on the history of simulations and games for professional use for *Simulation Gaming*, Delft University of Technology's Igor Mayer (2009) traces the transition from gaming for military commanders to gaming for policy makers. In the 1960s, the concept of systems analysis became

a trend in the world of decision making: "[Systems analysis] looks at the more complex behavior of systems mainly through the analysis of its interacting entities or components." (p. 827-828) Complicated, human-centric policy issues were beyond the aid of rigid models, he explains, leading to a trend towards "interactive, less formal methods of planning." (p. 829) To explore these new methods, he says that the flexibility and adaptability of gaming seemed to be the perfect fit, and a wide variety of gaming methods arose in the 1960s—early in that decade, city planning-specific games intended for educational settings were first publicized.

Mayer goes on to explain that these games generally fell into one of two categories. Some games are rigid games, which explicitly define what players can do, with adjudication handled by mathematical models and computers which, through the 1960s and into the 70s, were still novel, often-cumbersome devices that few had access to. Other games are free-form games, and allow players greater range of interaction, but require trained experts to interpret and adjudicate player actions into game response. (Mayer, 2009)

For most in the government, business, and academic realms, running complex models or bringing in a trained panel of facilitators was too much to ask. Even hobbyist games not meant for the professional world required a high level of dedication. Advanced Squad Leader, one of the best-regarded hobbyist wargames of the 1970s and 80s, featured a three-ring binder containing hundreds of pages of rules and charts, and scenarios that ran as long as six hours (BoardGameGeek, n.d.).

It took the proliferation of personal computers to bring these experiences to the masses. By offloading the simulation work to a computer program, the gaming process could be made more accessible to the public at a reasonable price, while still providing depth and detail. The University of Louisville's David Simpson (2001) explains, in a literature review of city simulation, that "because the processing speed and data storage capabilities of computers have increased—and because costs have

decreased—the opportunity to model, simulate, and apply virtual reality to the process of planning becomes more feasible and more practical." (p. 360)

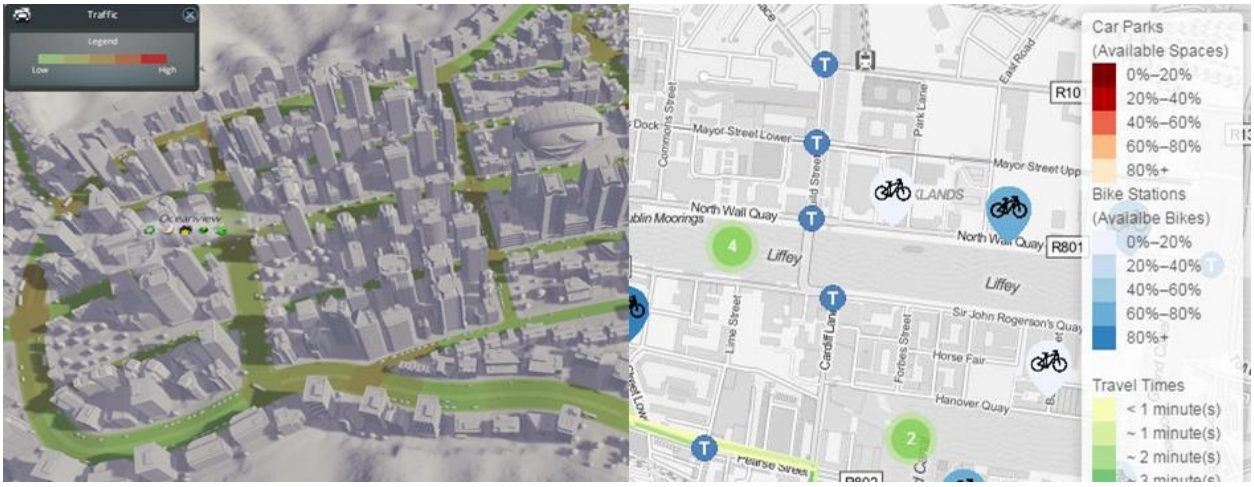
By the late 1990s, a wide variety of simulations were available. Wargaming had titles like 1996's Close Combat, which had around 2000 lines of code alone dedicated to simulating soldier psychology (McDonald, 1996). Games like PopTop Games' (1998) Railroad Tycoon II featured simulations of industrial production, alternative transportation systems, and the stock market, all running right alongside a player's trains.

City-builder games were becoming a prominent genre as well, and were beginning to be noticed by the city planning profession. In December of 1997, the journal *Cities* published a review of SimCity 2000—released in 1993, and rereleased on Windows in 1995 with added content. In this review, Paul Adams of the Department of Geography and Planning at SUNY Albany, addresses the importance of the success of the first two titles of the series, which had sold over five million copies. He notes that the "program's popularity attests to the possibility of designing urban simulation models with broad public appeal." (p. 383)

In addition to helping to teach planning, the focus of most scholarly attention to these games, city-building games have found further use as tools of public outreach. In 2016, the city of Hämeenlinna, Finland, held a design contest for tackling emerging local planning issues. By providing players of Cities: Skylines, a popular contemporary city-builder game, with a save file containing a model of the city, as well as a briefing on the city and its aims, the city sought to engage the public and encourage novel yet feasible ideas for its transportation and services networks (Guzman, 2016). Around the same time, the City of Stockholm held a professional planning workshop to discuss the design of a new district of the city, using Cities: Skylines as a simulation tool for the planners in attendance to model their ideas (Paradox Interactive, 2016).

Beyond the use of the games themselves, city-builders also have an influence over the tools that planners and decision-makers use every day. Modern GIS software resembles games like SimCity in both appearance and function, and outreach programs teaching people about GIS have used this game as a starting point to transition into the real software. This is not by accident; as part of a keynote speech in 1998, an executive from a major GIS software developer specifically named SimCity as an inspiration for the future of their program. (Lobo, 2005) Urban dashboards, which condense a city's status down to simple graphics, icons, and summary statistics, are becoming more prevalent and drawing concerns that they foster "a top-down, technocratic vision" of city governance. (Mattern, 2015, para. 15) Their resemblance to not only city-builder games, but data-heavy games of other genres as well, is uncanny.

The traffic data overlays of Cities: Skylines (left) and the City of Dublin's urban dashboard (right; Mattern, 2015)



Teaching Planning with Games

Parallel to the rise of computer gaming has been the increasing attention the field of pedagogy has placed on their educational potential. Writing for the American Society of Engineering Education's *Prism* magazine in 2007, Purdue University's Phillip Wankat and Frank Oreovicz (2007) emphatically declare the need for incorporating games into lesson plans to better connect to a generation growing up around them. They point out that modern practice—in engineering, though the same could be said for

many other fields—features increasing use of digital tools for simulation and presentation, and comfort with gaming goes a long way in preparing for this.

Understanding videogames can also help educators understand how students of today learn. Wankat and Oreovicz explain: "There is little need to read manuals because trial and error is faster and one can always turn to the Internet for help. The range of options is far greater than in the real world, feedback is rapid, and consequences can be severe." (p. 48) Gamers, they say, "are accustomed to learning small bits delivered just-in-time with almost immediate feedback. They are hands-on, interactive learners who think doing is more fun than studying." (p. 48)

The purported strength of teaching through computer games also comes from the notion that players make a strong mental and emotional connection through interaction. Writing about the power of gaming over other methods of practice in the business world, Paul Bracken of the Yale School of Management describes this power:

> The problem with many strategy techniques is that they are too cold and bloodless. They fail to capture human emotions, and because of their icy rational character, people do not really pay attention to them. They are soon forgotten, and they make no lasting impact on the organisation. Gaming is profound learning experience, one that is not soon forgotten. (Bracken, 2001, p. 18)

In the realm of city building games, educators began to discuss the potential for SimCity to be of value in the planning classroom almost as soon as the first version of that game was created. In his review of the first SimCity, (Maxis, 1989) political science professor James Simmons (1989) has trouble describing it as mere novelty: "Despite packaging that would indicate that it is a game, Simcity is a fairly serious educational tool aimed at students of urban planning and strategic simulation." (p. 379) Ronald Pahl (1991) of California State University at Fullerton does not even wait for the reader to get into the

article to make his stance known in his review of SimCity titled 'Finally, a good way to teach city government!'

By the 1990s, between the ubiquity of computers and accessibility of commercial city-builder games, planning educators began experimenting with bringing games into the classroom. In his review of SimCity 2000, SUNY's Paul Adams saw the educational potential: "[…] SimCity is a teaching tool, although the teaching is of a subconscious nature, an internalization of what 'works' in the context of the game, without necessarily an opportunity to verbalize or consider what has been internalized." (Adams, 1997, p. 383) He finds further strengths in teaching with such a game: It is entertaining, can "teach at a 'gut level' what might otherwise take weeks or months" to learn. (p. 388) While of questionable value on its own, Adams saw the game as an excellent teaching tool for building student interest and encouraging reflection and critique of its simulation.

In addition to reviewing the game, Adams began experimenting with its use in a classroom setting. The results he published 'Teaching and Learning with SimCity 2000', detailing his use of the game in an urban geography class at SUNY, in Albany, New York. His hypothesis from his review of the game, that the game would spark interest in planning and thoughtful reflection proved to be true. Out of twelve activities that semester, nearly half of students named SimCity as their favorite, more than twice the number of students as any other. About a third of students found their gameplay engendered greater respect for the work of city officials, and the same number thought the game provided insight into how complex a city is. (Adams, 1998)

Research into the teaching applications of city-building games has continued into this century. John Gaber (2007), who taught community planning at Auburn University, published his own experiences in using SimCity 3000 (Maxis, 1999) and SimCity 4 (Maxis, 2003) in the classroom. Cautioning against overreliance and failure to support game-based lessons with lecture and discussion,

he concludes that "SimCity is extremely successful at reaching specific learning objectives in a planning class" and that planning teachers should consider it a vital part of an engaging curriculum (p. 120).

Westfield State's Kathryn Terzano and University of Michigan's Victoria Morckel (2017) provide another recent example. They added a weekly lesson with SimCity 2013 to an undergraduate general-education course on community planning. Students who played SimCity, as well as a control group that followed standard curriculum, completed surveys at the beginning and end of the semester, assessing their thoughts about community planning and the class itself. While the game did not lead to increases in self-reported learning gains and did not have a significant effect on increasing interest in planning as a major, those that got to play SimCity maintained their interest in the course while those that did not lost interest. An additional finding was that the students who played the game also saw planning as more fun and more creative.

Interest in teaching planning concepts with city-builder games has reached well beyond the United States, too, despite any cultural barriers that could arise from their frequent focus on Western cities and governments. Minsung Kim and Jungyeop Shin (2016) introduced SimCity 4 into an urban geography course in a South Korean university. They found that, after giving students time to get acquainted with the game and with supporting instruction, students enjoyed the game-based activities, and were more engaged and interested in the course. As far as the educational benefits of learning through play, they explain that "participants attempted to project diverse urban geography theories onto their urban structures, and in doing so, they critically evaluated the logic and functioning of urban principles" in the game (p. 49).

The use of these games as a teaching tool can be found in Turkey, as well, in introducing planning to a much younger audience. A study published in the *Journal of Adolescence* by Zeynep Tanes and Zeynep Cemalcilar (2010), measured the effects of playing city-building games on the perceptions of

students in Istanbul as to their own city and its governance. A sample of 7th graders—chosen because Turkish curriculum does not include civics classes until 8th grade, so the students would have fewer preconceived notions—were provided with copies of SimCity 2000 and encouraged to play in their spare time over the course of six weeks, with school computer labs available for those with limited computer access at home. Surveys were given before and after the period, with answers compared to a control group who did not play.

Despite lacking previous education in such subject matter, playing the game shaped how the students looked at cities. Tanes and Cemalcilar write that the students showed significant increases in the use of zoning and land use in discussing what makes an ideal city, significantly increased expectations in a city government's role in economic development and citizen wellbeing, and significantly increased feelings of city officials' poor performance in their jobs. While suggesting studying the use of games further, they conclude that "integrating SimCity into citizenship classes might be beneficial for Turkish adolescents and for adolescents with similar educational and cultural backgrounds all over the world." (p. 738)

Criticism of City-Builder Games

Despite their growing use in the classroom, it would be wrong to assume that these games are without their critics. Planner and urban designer Daniel Lobo (2005), now a senior director with the Urban Land Institute, wrote a discussion paper for the London School of Economics titled 'The City is Not a Toy', elaborating on everything he saw wrong with SimCity games and the influence they had started to gain in the planning profession. Criticism ranged wide, including such topics as the underlying assumptions in the game, the aesthetic presentation in urban design and architecture, the many issues the games fail to address, the portrayal of planning as a game, and how such games were creating, in his opinion, an overdependence on computer models and GIS mapping.

These concerns are not without precedent, and can be found in the earliest literature about city-builder games. James Simmons' (1989) review of the first SimCity does well to praise the game, but also outlines several concerns in the assumptions the game makes, such as its focus on growth as success, and an unrealistically powerful planner serving as the player's role. Paul Adams' (1998) wrote about how his students who were majors in a planning-related field were less likely than the other students to like SimCity 2000, sixty percent versus ninety percent, respectively. Adams' students raised concerns not unlike Adams himself, calling out how the game made major events seem inconsequential, and allowed players to bulldoze entire neighborhoods without a second thought.

A separate review of Simcity 2000 described a similarly mixed reaction (Kolson 1996). This author saw educational value: he likens its teaching potential to when a compelling biography of Robert Moses, *The Power Broker* (Caro, 1975), taught all the lessons he hoped to in one of his classes, but in a much more vivid and engaging manner. However, he takes fault with how the game overrepresented the role of the municipal government and its planners in the development of a city. He also finds fault in the game's exclusion of the issue of race, and how the game focused entirely on the physical, material side of a city rather than the social life of such a place.

Another decade passed, yet these basic criticisms remained surprisingly consistent. John Gaber, (2007) in using SimCity 3000 and SimCity 4 in his lesson plans, found many of these same elements to be problematic, despite the significant changes that had occurred within these games over the previous 25 years. The games overstated, he says, the role and power of the player-as-planner, and the instant outcome of major projects trivialized what is often milestone moments in a city's development. Gaber also faults the apparent success of all actions being measured through the lens of economic development, the idea that players begin cities from empty plots of land without dealing with the past, and the portrayals of citizens as little more than decoration rather than as dynamic social beings.

However, he does not find these flaws disqualifying, and offers a more positive conclusion. Gaber discusses, perhaps stating the obvious, that the games are not planning as it is, but are planning as the game developers interpret it to be, built around assumptions that often depart from reality. However, he sees these flaws as great points of classroom discussion, as "several of the more obvious SimCity limitations can also be seen in the planning profession" itself (Gaber, 2007, p. 116).

These criticisms regarding the limits of the games are sometimes described as strengths when appropriately contextualized in a classroom setting. Specifically framing their work in the context of Lobo's paper, John Minnery and Glen Searle (2014) write about their experience in using SimCity 4 in two of their classes. Concerns like that of Lobo and others came up in class, except often via the students themselves, especially from the graduate students involved, not unlike the experience of Paul Adams. Instead of using this as evidence to condemn gaming as education, Minnery and Searle explain that the gaps between reality and simulation are excellent points of discussion in the classroom, and that when couched in specific subject matter, the games are a powerful teaching tool.

Influence Outside of the Classroom

While several studies have been published about the role of city-builder games as teaching tools inside the classroom, what is less explored is what these games convey to the public playing at home. This should be a concern, too. While seemingly a niche genre, these games have audiences of millions, via directly playing a title, or watching others play it online. It is likely that most of this audience will never set foot in a planning classroom and will never get the contextual lectures that planning educators routinely recommend as necessary.

Some argue that even classroom-bound educators should take more interest in what can be learned when playing elsewhere. In studying informal learning through games outside of school, Selen Turkay and Sonam Adinolf (2012) of Columbia University explain: "work in the field of games and

learning has mainly focused on developing educational games for teaching school subjects; literature mainly consist of studies which were conducted either in school or after-school programs." (p. 3346). Turkay and Adinolf go on to say, "considering that the majority of human life, and therefore learning, takes place outside of formal educational institutions, the question remains how much of this learning might be gained from playing games." (p. 3346) While education-focused games can struggle to appeal, they found that 91% of their sample stated that they have learned from games and believe that games are an effective way to learn.

More than education alone, various forms of media can have more subtle impacts, from influencing simple choices, to fostering interests and new hobbies, and up to educational and career pursuits. In writing for FiveThirtyEight, Walt Hickey summarizes a range of news stories as such:

> Attendance at the American Museum of Natural History rose 20 percent after "Night at the Museum" came out, U.S. tourism to New Zealand increased 23 percent after "The Hobbit" hit theaters, and Croatia's tourism business has been booming since "Game of Thrones" shot some scenes there. Or, how about this? Drivers seem more prone to speeding after The Fast and the Furious movies are released. (Hickey, 2018)

The effects that various forms of media can have are difficult to study but can be profound. Lisa Rosenthal (2013) at Yale University analyzed how exposure to information about role models affected female pre-med students. Participants who read five stories about female doctors, adapted from existing biographies found online. reported higher interest in pre-med studies and in careers in medicine, a greater sense of belonging in their program, and a higher compatibility between their gender and medical professions. A report by Caroline Heldman (2016) of the Gina Davis Institute on Gender in Media describes how female participation in competitive archery doubled after the release of

the films *The Hunger Games* and *Brave* in 2012, with 7 out of 10 girls under the age of 18 reporting that the heroines of those movies influenced their taking up archery.

The role of these games as cultural objects in a broader context cannot be ignored, either. In her book, *Dreamscapes of Modernity: Sociotechnical Imaginaries and the Fabrication of Power*, Sheila Jasanoff (2015) argues that examining a society's *cultural works* can be critical to develop an understanding of that society's ideas and values about the present and future of the world and its science and technology, particularly through analyzing science fiction:

> […] technologically-enabled futures are also value-laden futures. Science fiction stories express fears and yearnings that are rooted in current discontents, either signaling possible escape routes or painting in morbid colors the horrific consequences of heedlessness in the present. They thus offer a deeper look into—possibly even predictions of—what harms societies are most desperate to avoid and what good they may achieve through foresight and imagination. (Jasanoff & Kim, 2015, p. 337)

This call for an analysis of science fiction to understand societal relationships to science and technology can also apply to city-builder games. All these games were made by teams of developers who decided what the game will celebrate, problematize and spurn. City-builder games are imaginations of planning made manifest and put before the public at large, conveying to players a set of values, ideas and hopes, each time a player is rewarded or penalized. The end result of a player earning all these rewards is what the game and its developers prize as an ideal city and society. It is imperative that planners understand what these games have to say.

2 – Sample and scope

City planning is an inherently interdisciplinary field, with its educators needing to familiarize the planners of tomorrow with many different topics, methods, and theories, and where, like a fractal, a professional may focus in on any specialty to find it just as complex as the big picture. The computer games that mimic this profession often do well in reflecting several elements of this quality, and an entire thesis could be written exploring just one game in-depth.

Despite the genre's multiplicity, the literature covering these games rarely focuses on more than one game, and they all tend to focus on the same few titles. At first, it was SimCity 2000, the second game in the franchise. This title captured the imagination of many planners and planning scholars (Kolson, 1996; Adams, 1997; Adams, 1998; Tanes & Cemalcilar, 2010). Later publications continued along the series' progression through its third and fourth installments (Gaber, 2007; Minnery & Searle, 2014; Kim & Shin, 2016), and into the most recent release from 2013 (Terzano & Morckel, 2017). Lately, scholarship has focused on a game from outside the SimCity franchise, from different developers, named Cities: Skylines (Guzman, 2016; Paradox Interactive, 2016). The similarities between it and the SimCity games run deep, with Cities: Skylines often considered to be the successor to SimCity's place in the industry.

This limited focus on one or two titles does city-builder games, as a genre, a disservice. Clearly, the SimCity series has seen decades of success since the franchise's first release, been consistently well-reviewed by critics, and done well to present a serious topic in an approachable way. However, not every city-builder game looks like SimCity, plays like SimCity, or translates the planning profession into a game the same way as SimCity. As of March 2018, PC gaming's biggest storefront, Steam, lists 150 games bearing the crowdsourced tag of "City Builder" (Valve, 2018), an offering that is by no means complete. And while many of these games' ties to city-building are tenuous at best, there is just as many

that are equally focused on the topic as SimCity. Meanwhile, other genres can, and often do, feature concepts relevant to city planning, despite not being the game's explicit focus.

For anyone who has only played or seen the SimCity games or similar titles, the diversity of setting and focus present in other games might seem astounding. For fans of historic settings, the Caesar franchise (Impressions Games, 1992) sees players building sprawling cities and meeting citizens' needs in ancient Rome, while Banished (Shining Rock Software, 2014) requires players to manage a small and isolated village where surviving the next winter is far from certain. Players who want to consider what-if questions of the future can manage the archipelagos of a world ravaged by rising water levels in Anno 2070 (Blue Byte, 2011) or the first colonies in the hostile environment of another planet in Surviving Mars (Haemimont Games, 2018). For those looking for a more fantastical feeling, Kingdoms and Castles (Lion Shield, 2017) sees the development of a quiet castle town occasionally beset by dragons and Viking raids, while Frostpunk (11 bit studios, 2018) forces difficult choices upon players against the backdrop of a frozen Dickensian world of fading hope and growing discontent.

While these games are interesting and would have much to say on the life of a city, this project instead concerns games that address contemporary planning in modern cities. To address the singular focus that persists through past literature, this project will look at multiple games, comparing the two titles most familiar to planners with two of their contemporaries in the genre which emulate the planning profession through their own perspectives. Combined, these four games will give a more complete idea of how the genre today portrays the planning and governance of a city. These four games are:

SimCity – Released in 2013, SimCity is the most recent title in the classic franchise generally seen as the quintessential city-builder. Developed by Maxis, who have been responsible for the entire series, and published by Electronic Arts (EA), SimCity was released to middling reviews, currently holding

an average of 64% on review aggregator Metacritic (2013). While mixed reactions to new mechanics and the game's focus on the interaction between smaller cities in a region left those wanting a singular large city disappointed, much of the damage to opinions on the game came from a controversial launch. The game initially required a constant internet connection to EA's servers, which frequently crashed in the weeks following release, which prevented anyone from playing the game at all. Late 2013 saw the release of an expansion pack, Cities of Tomorrow, which explored urban futurism through features such as arcologies, megastructures, and drones. Despite its difficulties at launch, the game still sold over two million copies in its first four months. (Matulef, 2013)

Cities: Skylines – Released in 2015, Cities: Skylines is the work of Finnish developers Colossal Order, their first city-builder game after having previously released two games in the transportation simulation series Cities in Motion. Since launch, five major expansions have been released, with foci ranging from nightlife and tourist attractions to sustainable development and green technology. The game, published by Paradox Interactive, is a critical and commercial success, with an average review of 85% on Metacritic (2015) and over five million copies sold on PC (Kerr, 2018), with Playstation 4 and Xbox One releases just last year. Given the latest SimCity's struggles, Skylines was quickly able to take its place in the market. Writing for Polygon, games journalist Colin Campbell (2015) explains "Cities: Skylines is undoubtedly in the tradition of SimCity. It is impossible to talk about the game without reference to Maxis' series of games." (para. 26) The article even outlines how the developers put off working on the game once SimCity was announced and were only given approval when SimCity's ill-fated release proved there was demand for, and room in the market for, a competitor to SimCity.

Tropico 5 – The fifth title in franchise and the third to be developed by Haemimont Games and published by Kalypso Media, 2014's Tropico 5 focuses on more than just building a city. With strong elements of humor and satire, the game puts the player in the role of the leader of a Caribbean island nation, with the tools and options needed to run the country as a thriving democracy or an oppressive

dictatorship. Tropico simulates smaller towns than SimCity or Cities: Skylines, with urban development focusing on constructing individual structures, from cottages and tenements to factories and farms, rather than controlling land use through zoning. This geographic scale also allows the game to simulate each resident in great detail, including aligning with political factions that advance their own interests. A wide variety of additional content has been added in themed expansions, the two largest focusing on espionage and security, and off-shore and coastal development. The average review of the game stands at 75% on Metacritic (2014) with most criticism stemming from the opinion that the game does not do enough to distinguish itself from the previous game in the series. While exact sales data is unavailable, the publisher has said it was the most successful game in the franchise (Makuch, 2014), and game statistics website SteamSpy (2018a) estimates that it has sold over 1.25 million copies.

Urban Empire – Billing itself as a "city-ruler" game, Urban Empire is a city-builder that, in addition to approaching the player's role in development differently, also strives to simulate the political struggles of a city government, with most of the player's actions being voted on by a city council that the public routinely votes into office, comprised of parties with different agendas and beliefs. Rather than the roads-and-zones approach of SimCity and Cities: Skylines, players expand and develop the city as discrete neighborhoods, with land use mix and amenities handled on that level, and most city service buildings being considered as part of that neighborhood's plan when facing the council's vote. The game also strives to incorporate the history of modern cities, tracking the evolution of industrialization, labor rights, public health, utilities, and the rise of the service sector. Developed by Reborn Games and published by Kalypso Media in 2017, Urban Empire currently holds a 62% review average on Metacritic (2017), with concerns over its poor graphics, lack of flexibility, unhelpful interface and controls, and confusing information presentation, outweighing widespread praise for attempting to approach the genre from a different perspective by simulating the nuances and complications of real representative

governments. It is also the least successful title of the sample, with SteamSpy's (2018b) estimates at well under 100 thousand copies sold.

Game reviews, it should be noted, function more closely to school grades (where mid-seventies are considered merely average and anything below a 60% is a failure) rather than the five-star scale typically seen in other media (where a three-out-of-five 60% is seen as something well worth a reader's interest). (Metacritic, 2018)

Planning For and With People

To bring the depth of analysis needed to make this project worthwhile, some specific aspect of planning will need to be singled out for study. As mentioned earlier, these games do well in reflecting many facets of the planning field, with a player accomplishing tasks that would fall to multiple planners in multiple departments in most cities, from subsurface infrastructure to roads, from services to economic development. Covering all that any one game contains would push the constraints of a single thesis; this project will be looking at four games.

The criticism of city-builder games tends to reveal some recurring issues, and the theme of many of these issues is that of the inclusion of a city's residents, and the portrayal of their role and power in the planning process. Talk of using these games as teaching tools almost always come with the caveat of the need to pair playtime with lectures on what is missing from the picture the game presents.

But most people who play these games are not planning students and will never have an instructor to caution them on where their digital creations depart from reality. These are the same people who are part of the public that these games, critics say, are poorly representing in their portrayal of city planning and governance. And with the lasting impression that any creative work can have, especially one as immersive as a computer game, if the critics are correct, then many players might very

well come away from their time with games like SimCity feeling disempowered and unlikely to try to get involved.

For much of its early history, the planning profession operated under what is most commonly referred to as the comprehensive rational model. In an essay tracking how the model persists in planning, planning educator Linda Dalton (1986) of Cal Poly summarizes the nature of comprehensive rational planning: It is utilitarian in nature, driven by logical positivism, and defined by "objectivity, analysis, and efficiency." (p. 147) She goes on to explain that planners eventually began to recognize that practical and political reality made such a process unfeasible, but rarely went further in questioning the assumptions that the comprehensive rational model had embedded into planning. Many planners, she says, continue to hold comprehensive rationalism as an ideal subconsciously, even while criticizing it overtly.

By the 1960s, however, the critics of the comprehensive rational model began to articulate alternatives. Most famously, Paul Davidoff (1965) declared that planners should not remain purely objective and should engage in the sociopolitical forces that they had worked against before. The comprehensive rational model itself, he explained, is not as objective as it seems: any plan has desired outcomes, and those outcomes have subjective values and desires attached to them. "The prospect for future planning," he wrote, "is that of a practice which openly invites political and social values to be examined and debated. Acceptance of this position means rejection of prescriptions for planning which would have the planner act solely as a technician." (p. 331) Under this model of advocacy planning, free from the pretense of objectivity, planners would advocate on behalf of the political interests of the city in their work, and in a democracy, this would mean the interests of different sections of the public.

Advocacy planning was not the only new view of what planning ought to be that emerged. Several other planning models were proposed in response to the shortcomings of comprehensive

rationalism, such as synoptic planning, transactive planning, and communicative planning. One recurring theme of each successive model was consideration of the role that stakeholders and the public had in the decision-making process in their cities. (Lane, 2005)

But not all forms of participation are equally meaningful. In her landmark paper 'A Ladder of Citizen Participation', Sherry Arnstein (1969) considers public participation to ideally be a vehicle of public power, a means of reallocating influence from traditional decision-makers to a public often excluded from choices that can have profound impacts on their lives. In this paper, she lays out a spectrum of participation methods arranged by the ability of the public, particularly disenfranchised groups, to inform powerholders—government officials and private-sector influencers—in the decision-making process and, crucially, have control over the outcome. At one end of this spectrum, the bottom of the titular ladder, are methods of public engagement that are little more than the powerholders lecturing the public. In the ladder's middle, the public provides input but have no means with which to ensure that input is fairly reflected in the end. The top of the ladder sees the public gaining that ability to hold powerholders accountable, acquiring majority or complete control of final approval.

In the years since Arnstein's work, exploring the topic of public participation has been a preoccupation of many from within the realm of planning and public decision-making and from other fields as well. To better understand what public participation is and is not, Rowe and Frewer (2005) lay out a set of definitions to better classify the activities and methods that connect decision-makers to the public. They find that the phrase public participation is misleading and relegate it to one of three types of what they instead call public engagement, with participation joining communication and consultation. The differentiation comes from the intended flow of information, whether both sides are offering and receiving information, only the event sponsor is offering information, or only the event sponsor is receiving information, respectively. These three categories are sorted further by common variables and intended outcomes to provide a way of classifying engagement methods and evaluating their efficiency.

While Rowe and Frewer's model is useful from a functional perspective, Archon Fung (2006) provides a way of looking at public participation in a more theoretical manner. His Democracy Cube provides a three-axis framework that allows comparison of existing engagement methods with newly-devised methods as well as activities that do not involve the public at all, such as the decisions of agencies and policy-makers. The first axis, Participant Selection, looks at not only how wide of a section of the public can participate, but how selective the method is at choosing participants from within the group. At one extreme is the public as a whole, which then moves through selected members of the public, then stakeholders and elected representatives, and ends with administrative experts at the other end. The second axis, Communication and Decision, considers the intensity and involvement of exchanging information and coming to decisions, ranging from mere spectators and straw polls to negotiation and direct application of expertise. Authority and Power, the third axis, measures the power and influence the participants have over the outcome, whether that's as weak as having no power at all beyond personal benefits such as learning about an issue, or as strong as the participants having the final say.

To this day, the field of planning has grappled with this issue of public participation and balance of power, while working to remediate the disparities created from an era where "objectivity, analysis, and efficiency" (Dalton, 1986, p. 147) were considered absolute. The American Institute of Certified Planners has enshrined the need for public participation in its guiding documents. The AICP Code of Ethics (2016) states that planners should give the public the chance "to have a meaningful impact on the development of plans and programs that may affect them. Participation should be broad enough to include those who lack formal organization or influence." (Section A1) In serving the public interest, planners should "recognize the rights of citizens to participate in planning decisions". (AICP, 1992)

Alongside the growing role of the public as engaged and involved individuals in the progression from comprehensive rational planning to the theories of today, more attention was given to the

conditions that the public faces in larger groups: the role that race, wealth, and other socioeconomic factors, play in the planning process. It is no coincidence that planning's turn towards public participation coincides with the latter years of the American civil rights movement. Arnstein's (1969) introduction of the decision-making process's have-nots shows evidence of this:

> Participation of the governed in their government is, in theory, the cornerstone of democracy-a revered idea that is vigorously applauded by virtually everyone. The applause is reduced to polite handclaps, however, when this principle is advocated by the have-not blacks, Mexican-Americans, Puerto Ricans, Indians, Eskimos, and whites. And when the have-nots define participation as redistribution of power, the American consensus on the fundamental principle explodes into many shades of outright racial, ethnic, ideological, and political opposition. (p. 216)

The need for meaningful involvement for the public was seen as a remedy for the inequities that formerly prevalent planning practices, intentionally or not, embedded in the composition of a city.

Given the consistent criticism that the city-builder genre receives on a topic that is so fundamental to modern planning, the direction this project should take becomes obvious. The role that the public, as individuals and as groups, plays in their city's stewardship and steering is a topic of utmost importance that is more than worthy of closer investigation in any context. As will be seen in the next chapter, these are the ideas that form the framework of observation and discussion when examining each title.

3 – Evaluation methods and themes

The goal of this analysis is to look at what the current state of the gaming genre has to say about modern planning practice. Each game has been published within the past five years and portrays modern cities and their development in part or in full. To remain focused on titles most relevant to planners, those which can be introduced easily in both educational and professional settings, only PC games were included. All four games were played with all official additional content included, to best represent the game as it would be played today.

Each game was played under similar conditions, to best ensure a comparable experience and, as a result, comparable observations. All four games were played on the same computer, with all graphics settings set to their highest quality options, in case lower settings altered the visual depiction of the city's inhabitants, an aspect of each game that is explored in this project. Each game was played in its "sandbox mode", or whatever mode most closely approximated such an experience, with all default settings selected. This ensures that the game is experienced with all its mechanics, events, and goals, intact and unchanged, as opposed to playing through a game's scenarios, where significant changes are usually made to drive a story or create a unique situation.

To produce observations that are as reproducible as possible for the subjective experience that playing a game can be, attention is paid only to what is explicitly present in the game. While even attempting to introduce a degree of scientific rigor to what is essentially a content analysis of a cultural work may seem unusual, there is precedent for this in the history of critical theory, born of the same intent. New Criticism was a movement in literary criticism that sought to focus exclusively on a given work, examining its formal components and their interactions to analyze it.

A hallmark of the movement is its avoidance of intentional fallacy, attributing motives and intents to a creator that are not present in the work itself. (Gardner, 2013) Literary critics William Wimsatt and Monroe Beardsley (1946), in an essential essay on authorial intent, wrote:

> "[Analyzing a creative work] is like judging a pudding or a machine. One demands that it work. It is only because an artifact works that we infer the intention of an artificer. […] all or most of what is said or implied is relevant; what is irrelevant has been excluded, like lumps from pudding and 'bugs' from machinery." (p. 469)

To New Critics, the only aspects of a creative work, which would include video games, that can be given credence are what is patently present in that work, and that assuming anything more is irrelevant at best and fallacious at worst. Anything that the creator intended but does not show through in the final product is a failure of the creator.

This concept, avoiding the perils of authorial intent and focusing on what is in each game, is very appropriate for this project. While academia has largely moved on from New Criticism, with most newer disciplines bringing in sociocultural frameworks to serve as a lens to view works with, (Gardner, 2013) most players of these games, whether in a classroom or at home, are more likely to be concerned with what is in the game in front of them, rather than the interpretations of authorial intent. Besides that, working with what is patently present in the game for observations, and saving interpretation for the resulting discussion, allows others who are interested in this project to pick up these games and see for themselves what is documented here.

Four Themes for Four Games

For the purposes of this project, this approach can be called a Critical Inventory. Following this is an explanation of the themes that were explored in each of the four games. With the structure the themes provide, it becomes much easier to approach the complex arrangement of aural, visual,

mechanical, and interactive, components that constitute a video game, and take stock of what is needed for later critique, hence the name given to this. By doing well to define these themes, many possible topics of comparison and discussion resulting from the observations present themselves, and it remains clear what did and did not fall within the scope of this project.

Presentation of People – This theme looks at the ways the game presents a city's residents to the player, which takes many forms throughout each game. The first one is the most obvious: computer games as a medium are highly visual, so the graphic representation of people should receive consideration, both in how they look and what they can be seen doing. Do people look like people? Do they show some level of activity and interaction with the world around them, or are they merely decoration? How much diversity is there from one person to the next?

Alongside the visual presentation of people is their biographical representation, the information that helps players understand who their citizens are and what sort of lives they live. Sometimes, this data can be important to players in understanding their city's strengths and weaknesses, such as health, education level, and place of employment. But just as often, this information is functionally less necessary, if necessary at all—names, family histories, nationalities—but goes even further than the needed data in making each person feel like more than a mere data point. The simple act of being able to put a name to a face, even a digital face, can foster empathy before care is even needed. (Kiat, 2017) This information is also crucial in forming a representative group for public engagement. Organizers often select participants based on certain traits to ensure that all relevant groups impacted by a decision are represented in events discussing that decision. This becomes especially important in matters that disproportionately impact disempowered groups that are traditionally shut out of the planning process. (Fung, 2006) Lacking such information in a city-builder game might suggest to players that these crucial differences in participants might not even exist, let alone whether or not they matter to planners.

The ways in which a player's digital residents are portrayed collectively also forms part of this theme's scope. Part of this can manifest in stylistic choices, such as the iconography used and the words selected to refer to residents as a group or as a whole. However, most of the material for this comes from the statistical variables that players can access about their populace, and the way that information can be explored, sorted, and cross-tabulated. What can be learned about your city's residents implies those variables were considered important enough to be put before the player.

What the City Does for Residents – One prominent role for most cities is in the provision of services to its residents, and city-builder games reflect this well, with significant portions of a player's experience in many titles revolving around placing the buildings, planning the routes, and allocating the funding needed to provide for their residents' needs. Since this is a major component of a player's interactions with their city's residents, which makes it a major component of the residents' reaction to the work of the player, it would be helpful to understand what services each game expects players to provide in the city.

To address this question, this theme takes an inventory of the systems and services the player must establish or influence to provide for their citizens' wants and needs. This process begins before the first arrivals to the city show up, looking at what must be done to grow the population. Once those people do arrive, the work of the player proceeds to providing for residents to keep them alive and well and, hopefully, thriving. Through some deliberate negligence, this theme also looks at the issues that can arise in the absence of those services.

Public participation's benefits are on full display when addressing the provision of city services. While consulting experts in a given field is a common example of decision-makers seeking input from outside, this belies the power of the general public. In discussing the effectiveness of city services, Archon Fung (2006) writes about how seeking the cooperation of the users of specific services, such as

the parents of a school district's students, can result in more effective plans and better results. He also states that planners tasked with addressing neighborhood-level issues, such as crime and environmental concerns, can find that local knowledge provides crucial insight that cannot be found elsewhere. The involvement of the public, Fung also finds, can reveal needs and priorities missed by decision-makers, and can bring new ideas to a group of experts that have all been trained to think the same way. By understanding not only how services impact the public, but also which groups and individuals are impacted differently, the city government is better informed in setting policies and priorities, and can design effective ways of engaging the public when participation is necessary.

How Residents Respond – With what the city, and the player behind it, provides its residents known through the last theme, this theme takes stock of the ways those residents can provide feedback on the player's work, whether positive or negative. These modes of response can vary greatly.

Some of these modes are passive in nature. Some index of happiness, satisfaction, or approval, not unlike opinion polls on issues and politicians at every level, provide a simple point of data for players, which can often be expanded on into ratings on specific factors from which the overall rating is derived. This gives players a reference that might not hold much meaning on its own, but its changes can hint at whether a problem was created or solved, or whether recent actions are well-received or being condemned. Reaching the positive extreme of the spectrum is an accomplishment, while reaching the negative extreme is a sign of failure.

Other modes of response are more active, but still fall within the range of activities seen in a civil, democratic society. Economist Albert Hirschman (1970) described, in his classic volume of the same title, the public as having three choices in response to worsening conditions in business, associational, and political, situations: *Exit, Voice, and Loyalty*. In the context of a city, as in these games, Exit refers to the ability of a person to simply move away from the city as it deteriorates, implying doubt over their

own influence and in their belief of conditions improving. Voice takes many forms in a city, ranging from petitions and protests to letter-writing and voting, and relies on as an option either a belief in their own ability to affect change or a high cost or restriction impeding Exit. And the third, Loyalty, is to endure the problem and carry on, at least for the moment. Loyalty can make Exit more difficult, but also make the threat of Exit more impactful, and it can make choosing Voice a struggle, but can lend legitimacy to that decision once the time comes. However, these games may offer their people options that either do not fit into this framework, or might take one of these options to an extreme.

Social Dynamics and Issues – Consideration of public participation in planning has not just focused on the individuals that are brought into a discussion, but the representation of much larger groups as well. Again, as Sherry Arnstein (1969) explained, the planning process must contend with great inequities in power that often fall along racial, ethnic, and class lines, the haves and have-nots.

Other planning luminaries suggest that planners take a stronger stance in contending with inequity. In a reflection on her career, Susan Fainstein (2014), author of *The Just City* (2011), writes that her focus on the need for public participation shifted over time to a focus on justice in planning. "Sometimes this requires citizen involvement; at other times expertise might produce more just outcomes than participation." (p. 274) She's not alone in this idea. In his reflection on planning for equity in Cleveland, Ohio, in the 1970s, Norman Krumholz (1982) advocates for trading in the notion of a planner as an "apolitical technician serving a unitary public interest" (p. 166) and instead combat inequities between social groups directly:

> […] our work did not map out an ideal future in terms of land use, public facilities, and transportation routes. Rather it was made up of studies, proposals, and recommendations which seemed likely to resolve or ameliorate the worst problems of Cleveland and its residents. (p. 166)

It is in this spirit that this theme looks at the role that social groups play in planning, as well as the dynamics between these groups. From high-level societal divides such as race, religion, and socioeconomic class, to deeper but equally critical splits such as nationality, immigration status, and education levels, these are matters that are as relevant now as ever that planners cannot ignore. This theme holds these games to that same standard.

When inequities form between these groups, problems begin to arise, and individual crises become endemic. This theme will explore these issues as well. What effect can poverty have on a city-builder game's residents? How is crime opposed, and where does crime come? Can gaps form in medical coverage and population health? While a game's visuals may be the lasting memory, how these issues are addressed may be the game's lasting message.

4 – Finding answers

This project aims to answer a deceptively simple question: How do modern city-builder games portray the public and its role in urban planning and governance? As complex and involved as these games can be, and as important as they have become to the planning profession, this chapter highlights the four important conclusions taken from the observations gathered. Each finding is supported by evidence from the sampled games and connects to elated literatures on planning and public participation. These four conclusions cut across the four games and should raise concerns as well as possibilities:

1. *City-builder games commonly offer their residents a flawed range of options for dissent.* While SimCity and Tropico 5 offer some nuance to the decision to leave the city, Cities: Skylines fails to consider the cost of such a decision, and Urban Empire fails to include it at all. While Tropico 5 and Urban Empire provide robust options for expressing disapproval, SimCity and, especially, Cities: Skylines offer choices that are few in number and passive in character.
2. *City-builder games are inconsistent from title to title in offering their residents effective methods of engaging in the planning process.* Despite a few shortcomings, Tropico 5 and Urban Empire feature citizens becoming involved at varying levels of selectivity, intensity, and authority. SimCity and Cities: Skylines, however, offer little variety in the methods presented, with minimal authority attached to those methods.
3. *City-builder games typically do little to feature disadvantaged groups and social issues.* Only Tropico 5 was worthy of praise in the inclusion of marginalized groups and societal problems that modern planning works to address. Urban Empire and SimCity had weaker results, while Cities: Skylines arguably failed to address any at all.
4. *Most city-builder games fail to portray their residents as complex, developed individuals.* Urban Empire provides no individual information for its inhabitants, while SimCity and Cities: Skylines

provide a limited and strictly functional range of information. Tropico 5 stands out from the other titles by presenting residents as people with thoughts, feelings, and histories.

The Dynamics of Dissent

From the genre's earliest days with the release of the first SimCity game, a persistent criticism of city-builder games has been the unrealistic amount of control that players have, and the lack of accountability that comes with it. In one of the very first appearances of a city-builder game in academic literature, James Simmons (1989) points out issues that would persist in titles to come:

> The simulation's major flaw, however, is its lack of political realism. Sim citizens evidently allow their planner more power to manipulate events than do the urban residents of authoritarian systems. The computer user can bulldoze buildings and completely alter the character of the city without fear of opposition [...] Sims vote only with their feet causing a drop in a city's tax and population base. (p. 380)

This mention of the denizens of SimCity voting with their feet fits well with the theory of public response to deteriorating conditions that Albert Hirschman (1970) explores in *Exit, Voice, and Loyalty*. As defined by him, the residents of a city—residents being consumers, city services being public goods, and the city's government being the producer of those goods—have two options when a city begins to worsen. They can Exit, doing what Simmons observed his Sims to do and moving out of the city, or they can choose Voice, finding some method of expressing dissatisfaction to the city government, such as through protests or letter writing. The former is chosen when the certainty of something new is preferred to the uncertainty of recovery or when people believe their Voice option will not have an effect. Voice becomes preferable when the opportunities for Exit are low and costs of Exit are high, or when a choice that allows for further escalation is welcome. After all, someone can choose Voice and switch to Exit later, but it does not work the other way around. Complicating all of this is the pseudo-

choice of Loyalty, the decision to stay put and stay quiet, which can make either of the other two options more difficult, or make them more powerful, depending on the situation. The hope is that as more people begin to leave the city, or as more people begin to make their concerns known, those in charge—the player, in this case—will be forced to work to improve conditions.

The options available to residents in expressing dissent in each game, through the Exit, Voice, & Loyalty model.

	SimCity	**Cities: Skylines**	**Tropico 5**	**Urban Empire**
Exit	Middle- and high-income people can leave	Anyone can leave	Anyone can leave, not easy, depends on govt. policy	None
Voice	Happiness, missions from public, protests, thought bubbles	Happiness, speech bubbles, Twitter-like posts	Happiness, approval rating, elections, factions, missions from public, protests, riots, coups and uprisings	Happiness, council elections and votes, missions from public

Viewing these four games through the *Exit, Voice, and Loyalty* lens provides interesting context for what the residents of each title can do as their cities decline. SimCity is unique in that the ability to choose Exit is tied to wealth, which implies that Exit has a cost that is insurmountable to some. That residents have several paths for choosing Voice makes sense in Hirschman's system, because "the role of voice would increase as the opportunities for exit decline" and "with exit unavailable, voice must carry the entire burden." (p. 34) But with low-income residents becoming homeless instead of leaving, the game essentially has them take an Exit route anyways, as the homeless of SimCity have no active role beyond being a nuisance for the player.

Cities: Skylines, while often considered to be the spiritual successor to the SimCity series, works with the opposite assumption. Skylines sees its residents leaving at any time, even leaving their old homes abandoned, which implies no cost to Exit at all. This is the opposite of SimCity and its oft-prohibitive cost of choosing to Exit. The fact that Skylines' options for Voice are the most meager of the four makes sense, as Hirschman holds that minimal costs for Exit marginalize the role of Voice.

There are two flaws in the assumption that Skylines. First, given that Exit means relocating to a different city, the idea that it is a cost-free option would mean considering the price of moving some distance and finding a home and a job, ideally in advance, is negligible, even before considering less tangible costs such as the impact on children when changing schools or the loss of social connections. Secondly, the role of Loyalty is ignored, which would introduce an intangible cost to Exit based on a sense of belonging and attachment to a city. Loyalty also provides a motivation to maximize the effectiveness of the Voice option, and thus choose Voice, in an effort to see the city they love improve. Given that the people of Cities: Skylines are limited to such passive forms of Voice robs them of a way to take more affective routes.

The comparison made by Simmons between the denizens of SimCity and those living under an authoritarian system becomes especially appropriate when considering the third game, Tropico 5. With the most varied and most radical options for Voice between the four games, Tropico serves as an interesting case for Hirschman's model. While Tropico places no restriction on who can and cannot leave, leaving is not simple—fleeing Tropicans get off the island by hitching a ride on a cargo ship—and this game also allows the player to restrict emigration. These limitations are in addition to the general theme of Tropico as an authoritarian state, even if sometimes benevolent. Hirschman writes that "while exit requires nothing but a clearcut either-or decision, voice is essentially an art constantly evolving in new directions" (p. 43) and that this development of a range of Voice options is at its best when Exit is impeded. While Hirschman may not have had storming the presidential palace on his mind when pondering the many forms of Voice, the fact that the game's residents can even opt to do this demonstrates how the art of Voice flourishes among Tropicans.

Urban Empire is difficult to consider through the *Exit, Voice, and Loyalty* framework. Unlike the other three games, its residents have no Exit option at all. There is no thematic reason for this, as with the totalitarian possibilities in Tropico, it just does not happen, despite the presence of railway stations

and ports. Though it is not hard to imagine that even if it did have the potential for Exit, it would not be the predominant option in the city. As its use is largely dependent on the perceived power of the option, Swarelians have good reason to choose voice: they hold elections, unlike with SimCity or Cities: Skylines, to form a council that can check the player's power or even fire them, unlike with Tropico. Also, with its prevailing themes of pride in both city and country, and the prevalence of conservatism and traditionalism in the city council, Loyalty would likely steer many away from Exit, were it an available option.

By way of *Exit, Voice, and Loyalty,* each game presents some unique attributes, not all of which are positive. SimCity does well to show complexity in both options, but its homelessness mechanic denies any consideration for what role Voice plays for Sims who become dissatisfied enough for Exit but do not have it as an option. Cities: Skylines operates under questionable assumptions towards Exit and offers only a passive few choices for Voice. While certainly providing edge cases for it, Tropico explores just how broad and diverse the options for Voice can be within the context of a totalitarian state where Exit is limited. And while Urban Empire fails to include the potential for Exit, its use of Voice in the context of a strong representative democracy suggests that the lack of Exit does not change the outcome much.

Given that only one of the four games seems to have a robust system of expressing dissatisfaction, while two of them are reasonable but incomplete, and the fourth—the bestseller of the four—offers few choices on weak premises, the first of this chapter's four statements holds: *City-builder games commonly offer their residents a flawed range of options for dissent.*

Three Dimensions of Participation

While *Exit, Voice, and Loyalty* provides an excellent framework for considering the range of options available to the public in affecting their home city, as well as looking at the ways these options

interact, it falls short of commenting on just how effective each method is. To qualify the ways each game's residents can interact with city leadership, this section will revisit the work of Archon Fung (2006) and his Democracy Cube. Choosing this mode from among the many other ways that have been devised for evaluating participation provides benefits that play to the Cube's strengths: it allows for discussion based on theoretical merit, rather than practical merit, and it is an effective way at evaluating the participatory benefits of actions that are outside the realm of formal public participation. For clarity's sake, the actions available to the public in each game will be scored based on the three axes outlined in Fung's 'Varieties of Participation in Complex Governance', with the possible scores based on number of steps given for each axis. For example, as Authority & Power has five steps—Personal Benefit, Communicative Influence, Advise and Consult, Co-Governance, Direct Authority—scores on this axis will range from 1 to 5, with 1 as the least authority and 5 as the most. Participant Selection ranges from 1, more exclusive, to 8, more inclusive. Communication and Decision spans 1, least intense, to 6, most intense. Each game will be summarized based on the range of scores it receives for each axis.

The public's options for engaging with the city government and the player-as-planner, for SimCity

SimCity	Participant Selection	Comm. and Decision	Authority and Power
'Happy Face' Approval	8	1	1
Praises and Complaints	8	2	2
Thought Bubbles	7	1	1
Missions from Public	7	2	3
Protests	7	2	2
Exit if Affordable	6.5	1	1
Total Range	**6.5-8**	**1-2**	**1-3**

Lacking a detailed political system for the public to engagement with, the range of options covered by SimCity occupy a very limited portion of the Democracy Cube. The most selective the game gets is with its exit mechanic, where individual people choose to leave, but with the wealth requirement making it slightly stricter. Receiving missions from the public is the strongest that public power gets, as the player chooses to accept the direction of a resident but has the power to ignore that request.

The public's options for engaging with the city government and the player-as-planner, for Cities: Skylines

Cities: Skylines	Participant Selection	Comm. and Decision	Authority and Power
Happiness	8	1	1
Speech Bubbles	7	2	2
Twitter-like Posts	7	2	2
Exit	7	1	1
Total Range	**7-8**	**1-2**	**1-2**

Cities: Skylines sees similar issues to SimCity but manages to occupy even less space. This is due to lacking a restricting requirement for exit, or the ability to receive missions from the player.

Given that Tropico 5 divides Happiness and Approval, they are scored separately, and as Approval corresponds to the player's current election chances, it is given a higher score in the Authority and Power category. As faction leaders still hold other jobs, they are rated as Lay Stakeholders, and as they are speaking on behalf of a collective, they are scored a 4 for Communication and Decision. Elections fall short of being rated a 5 in Authority and Power since the player has the option to rig elections, cancel them, or ban them. As protests can be resolved by accepting a mission, they are scored higher in Authority and Power than SimCity's protests. Riots are separated from coups and uprisings by having no leadership or group representation, and lack specific aims like coups and uprisings. Give the trouble of translating these acts into the framework of civil actions, these scores are debatable.

The public's options for engaging with the city government and the player-as-planner, for Tropico

Tropico 5	Participant Selection	Comm. and Decision	Authority and Power
Happiness	8	1	1
Approval Rating	8	1	2
Faction Alignment	7	2	2
Faction Influence	4	4	3
Elections	6	2	4
Missions from Public	7	2	3
Protests	7	2	3
Riots	7	2	2
Coups and Uprisings	4	4	5
Exit if Possible	6.5	1	1
Total Range	**4-8**	**1-4**	**1-5**

The public's options for engaging with the city government and the player-as-planner, for Urban Empire

Urban Empire	Participant Selection	Comm. and Decision	Authority and Power
Happiness	8	1	1
Council Elections	7	2	5
Council Votes on Player	2	2	5
Council Votes on Issues	2	5	4
Council Influence	2	3	2
Missions from Public	7	2	3
Total Range	**2-8**	**1-5**	**1-5**

As council votes feature attempts at influence and persuasion between the player and the parties, and between parties on their own, they receive the highest score in the sample for Communication and Decision. Though it is costly, the player can overturn results of a council vote for issues, which earns issue votes a 4 while other votes get a 5 for Authority and Power.

Summary of the range of scores for each of the three axes of the Democracy Cube for each game

	Participant Selection	Comm. and Decision	Authority and Power
SimCity	6.5-8	1-2	1-3
Cities: Skylines	7-8	1-2	1-2
Tropico 5	4-8	1-4	1-5
Urban Empire	2-8	1-5	1-5

As with *Exit, Voice, and Loyalty*, assessing these games with the Democracy Cube leads to some very mixed results. Cities: Skylines again demonstrates the narrowest range of participatory options in the sample with options that see the public play very passive roles in the decision-making process, with little real authority backing them. While its Participant Selection score may seem flattering, scoring exclusively on the more-inclusive end of the axis, this is not necessarily a good thing. Fung observes that while "complete openness has an obvious appeal, those who choose to participate are frequently quite unrepresentative of any larger public," (p. 67) often biasing in favor of the wealthy and better-educated of the public. According to Fung, this issue is best addressed via methods closer to the center of the spectrum, either selecting participants to ensure representation, or using random selection to achieve a

statistically-sound sample. SimCity encounters the same problems as Cities: Skylines, with its only notable exception being that residents have the power to give players missions, allowing the government to choose to act under public direction.

Once again mirroring *Exit, Voice, and Loyalty,* not only do the other two games of the sample boast the more-robust selections of options for their public, these options also span a larger volume of the Democracy Cube. The faction leaders of Tropico acknowledge the role of stakeholders in city governance, serving as unpaid community leaders with enough clout to even contend in leadership elections, leading groups that can sway voters and provide direction to an accommodating government. Elections, even ones that the player can thwart, provide a higher level of authority than anything SimCity or Cities: Skylines offers. Even excluding coups and uprisings, which could be argued as being outside the scope of the Democracy Cube, Tropicans are offered a range of options at a variety of degrees of selectiveness, intensity, and authority. Even as Urban Empire, through the *Exit, Voice, and Loyalty* model, seemed incomplete due to lack of an Exit option, the Democracy Cube reflects favorably on this game. The presence of an elected city council that provides a check on the player's actions, going as far as being able to end the game by firing the player, provides the strongest examples of Authority and Power in the sample, and the interactions of the different parties and the player demonstrate a range of intensities in the Communication and Decision category. Its only weakness in the Democracy Cube is the lack of options that fall in the middle of the Participant Selection, where members of the public and stakeholders are more directly addressed.

As seen through Fung's Democracy Cube, this sample of city-builder games features two titles with very narrow options for public involvement with little communication or authority, and two titles that may have their flaws and eccentricities in the Cube but also provide options that span a substantial portion of its volume. The former two, SimCity and Cities: Skylines, are also the same two that boast the higher sales figures and more attention in planning literature. This suggests that the games with broader

reach and influence are also the ones that provide their residents with few and ineffective options in participation, overshadowing the strengths present in the other pair of titles, Tropico 5 and Urban Empire. This suggests the chapter's second of four statements: *City-builder games are inconsistent from title to title in offering their residents effective methods of engaging in the planning process.*

Addressing Inequity

The consideration of disadvantaged groups and the inequities of power has provided the impetus for much of modern planning's theoretical and philosophical evolution over the past half-century and continues to be a paramount concern to this day. From planning models advocated by Davidoff (1965) and Krumholz (1982) to the advancement of public participation by the likes of Arnstein (1969) and Fung (2006), the planning profession has sought to better understand, account for, and help ameliorate, social divides that cities often help perpetuate. This includes the enduring struggles from last century over race and class, the recurring issues of religion and immigration again coming to the fore, and the rise of modern forms of advocacy for gender equality and LGBT rights. As the field of planning becomes more involved in these topics, their connections to issues such as homelessness, crime, and addiction. While by no means a comprehensive list, a city-builder game that reflects modern planning would address many of these issues to at least some meaningful degree.

While the chart below assesses whether the social issues listed are present in a meaningful way, there are some cases that came down to a relative judgement. This was most necessary with Crime & Policing. While each game includes crime as an issue, Cities: Skylines and Urban Empire only use it as a general condition, with proximity to police stations or range of patrol routes playing the biggest role. What set SimCity apart was in the depth of making individual Sims into career criminals who attempt more severe crimes if their early efforts are successful, and what gave Tropico its boost was in

designating certain Tropicans as criminals to be caught and arrested, as well as its consideration of the impact of policing on feelings of liberty and freedom.

Meaningful presence of a range of social issues for each game

	SimCity	**Cities: Skylines**	**Tropico**	**Urban Empire**
Race and Ethnicity	-	-	-	-
Economic Class	+	-	+	+
Religion & Tolerance	-	-	+	+
Immigration Status	-	-	+	-
Gender Equality	-	-	-	+
LGBT Rights	-	-	+	+
Homelessness	+	-	+	-
Crime & Policing	+	-	+	-
Drugs & Addiction	-	-	-	-
Healthcare Access	+	+	+	+
Food Access	-	-	+	-
Total +'s	**4**	**1**	**8**	**5**
- indicates not present or only superficially present; + indicates detailed presence that affects game mechanics				

There were also instances where a plus-mark was awarded generously when no title stood out versus the others. Healthcare Access provides the best example of this: each game featured a need to place clinics and hospitals in accessible locations, with capacity of the system also a concern in three of the four titles as well. However, none of the games in the sample included the factor of affordability of healthcare, let alone other barriers such as culture, language, and hours of operation (Penchansky & Thomas, 1981). The closest any game came to addressing affordability was Tropico, which cheerfully states that healthcare is free to residents on the island.

Looking at the four titles in total reveals both varying degrees of success in addressing the harsh realities of cities for many, as well as gaps that in addressing certain issues across most or all of the games. Out of the eleven issues evaluated, only two of them were present in more than half of the sampled games, while five of the eleven issues are addressed by no more than one game. In addition to Drugs & Addiction, the powerful force that is Race & Ethnicity goes unaddressed by all four games. In looking at each game separately, only one game, Tropico, addresses at least half of these issues, while

one game, Cities: Skylines, barely manages to address just one. Once again, the two best-sellers with the most attention in planning literature are the two games found most lacking. With little to no presence across all four games for nearly half of the issues evaluated, and with poor results on a game-by-game basis, this chapter's third statement is a reasonable conclusion: *City-builder games typically do little to feature disadvantaged groups and social issues.*

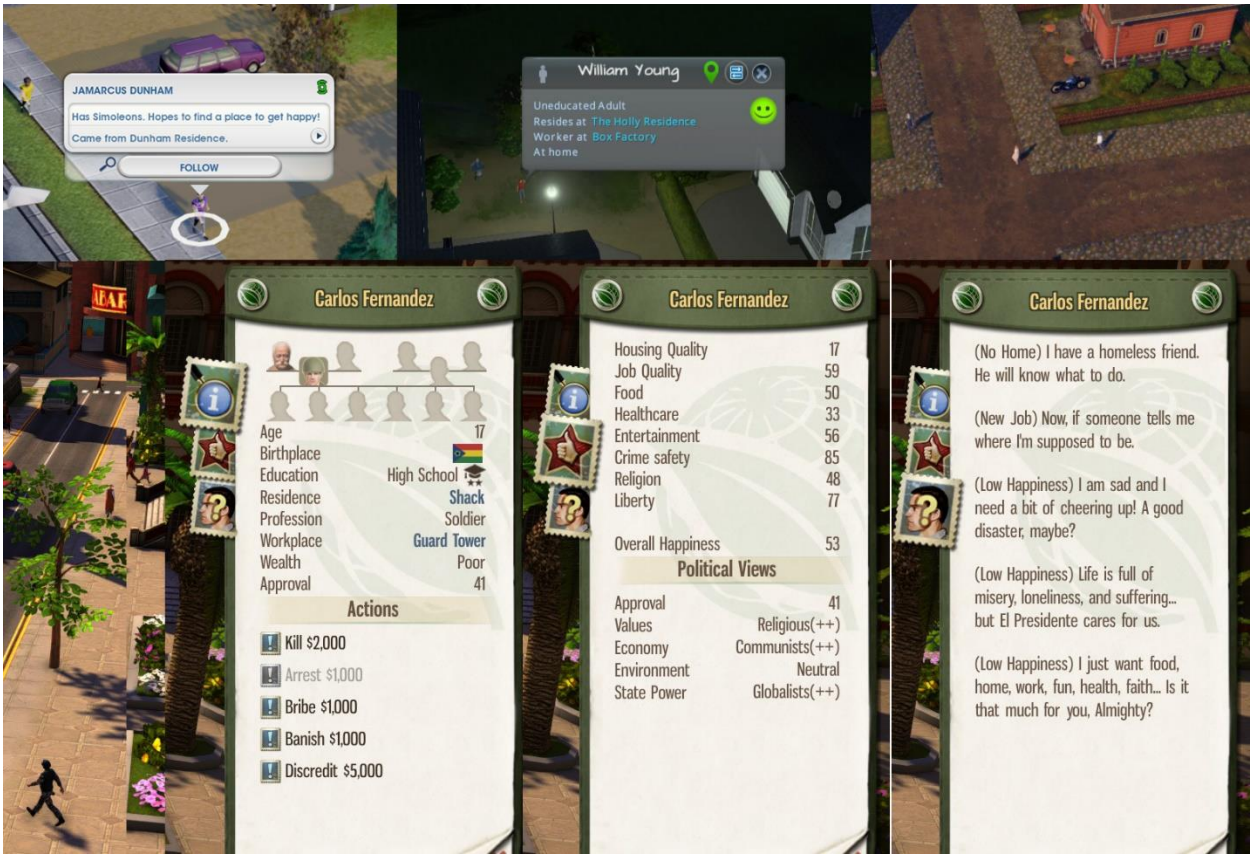
Making Simulations Feel Real

While the first two sections looked at the interactions between a city's residents and its leadership, and the third studied how the city government approaches or ignores inequities of social groups and the way those inequities manifest, this final section completes the picture by studying how the player-as-planner views the public as individuals. As players themselves are members of the public, this topic can also be interpreted as the player seeing how the city sees them.

The way that these games approach each of their city's residents is important. As discussed in the first chapter, the media that a person is exposed to can affect their perceptions of themselves and their place in society, (Rosenthal et al., 2013) and can also affect what values they believe are directing society from now into the future, whether good or bad. (Jasanoff & Kim, 2015) This portrayal of individuals in city-builder games can also affect how willing players are to get involved in their own communities, as willingness to express opinions to authorities is largely dependent on whether a person believes their voice will matter. (Hirschman, 1970)

One way to consider how each game treats its individual residents is to look at how complete their portrayal is, how the provided details combine to determine how fully realized the simulation is. Immediately, a great disparity between the four games becomes obvious. SimCity's information display has a person's name, if they're carrying money, what they are currently doing, and where they last came from. Cities: Skylines expands on this by offering name, education level, age, location of their home,

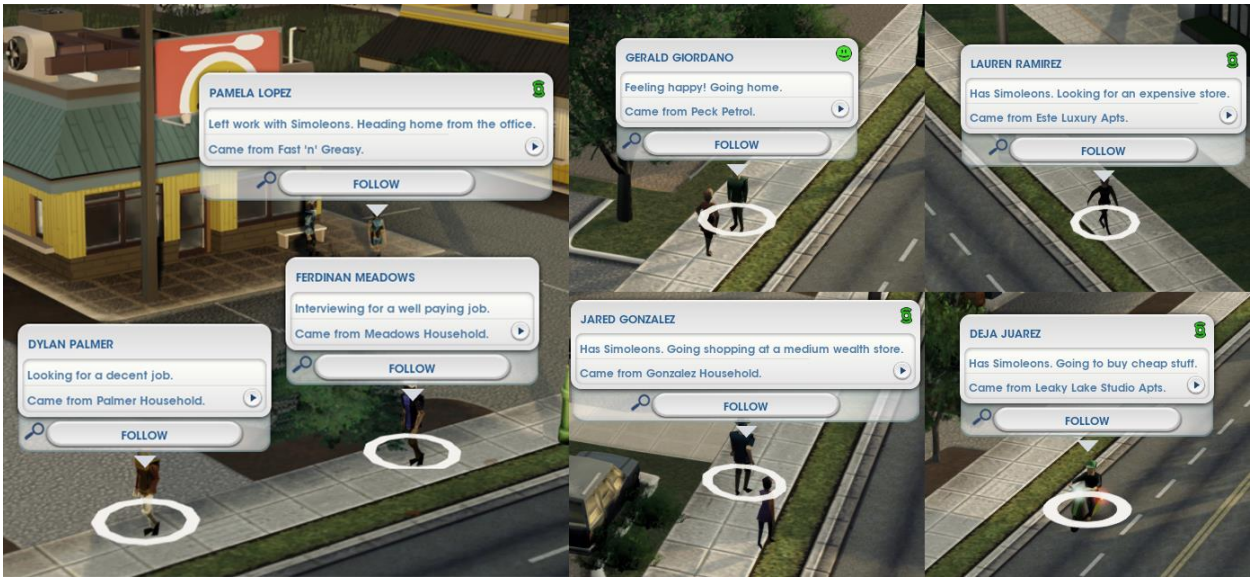
their job and its location, their current activity, and a face to indicate happiness. While both games may seem limited, they are not the most meager of the sample: Urban Empire offers no information at all about individuals.



Individual information for each game. Top, left to right: SimCity, Cities: Skylines, Urban Empire. Bottom: Tropico 5

As even the proportion of the above image dedicated to it suggests, Tropico 5 offers substantially more information. As viewed by clicking on them, Tropicans have family trees, age, country of birth, education level, type and location of home, occupation and its location, and income level. Their happiness, or lack thereof, is outlined with scores for each of the eight factors used to compute it, with a list of recent thoughts to illustrate what has most recently impacted them. Their approval of the player's work is also displayed, along with their political inclinations, which determine the factions they align with.

If the information these games include is what the developers felt the player needed at an individual level, then the sum of that information suggests what role the individual has in the virtual city. In this interpretation, Urban Empire's residents are nothing more than parts of a larger demographic. This fits surprisingly well with two of the game's hallmark features: its representative democratic government, and its planning actions occurring on a district-wide level. The denizens of Cities: Skylines are functional components of the city. The information provided includes the two factors that dictate their role in the workforce—education and age—alongside what that role exactly is, with current activity and a happy face to show their status. This utilitarian perspective holds true when compared to other findings in this chapter, as Skylines consistently had little to demonstrate about public power and ignored nearly all social factors and issues.



Left: Composite of three workers in SimCity. Right: Four different shoppers in SimCity

The information that SimCity provides suggests that their Sims are the fuel of an economic engine. The typology of Workers and Shoppers that most of the population is split between is further reflected in the information given. The information displayed tells of Workers going to work, or looking for a job if unemployed, and bringing home money at the end of the day. For Shoppers, the player is told

that they are carrying money, and that they are looking for certain stores or are in the process of shopping. The money is exchanged for happiness, which they then bring home with them.

Extrapolating from the information provided by Tropico 5 gives a more empowering outlook, showing the game's inhabitants to be quite complex. In addition to components that other games feature, Tropicans are people with definite families and histories, by way of the family tree and birth country. Not only are they happy, they have needs and desires that fuel that happiness. And while happiness plays a part, their political attitudes towards their government are not based solely on that happiness and are also informed by their views and beliefs. Because of this, Tropicans can be satisfied with their life and still want a change in leadership or can be miserable but still loyal to their ruler. Tropicans are also thinkers, quietly pondering their situation and the world around them, even if nobody asks them. And while not lengthy, these thoughts are not distilled into an icon in a speech bubble.

Tropico, however, is the exception in this sample, and the other three games do not provide the most optimistic example of how decision-makers view the public they govern. Most of the games provide limited information, if any at all, in developing the portrayal of each resident. If what information is provided can be subject to interpretation, the result are narratives of an individuals role in society, most of which are not flattering if the desired outcome is civic empowerment and encouraging participation. The fourth and final statement of this chapter summarizes this well: *Most city-builder games fail to portray their residents as complex, developed individuals.*

5 – Applying the findings

The findings of this project suggest that the way the public, the issues impacting them, and their capacity for involvement in decision-making, is handled by the four city-builder games is quite dire. The discussions in each of the four sections of the previous chapter mostly serve to expose more and more shortcomings in the sample's games, particularly the games that also have the most reach and influence.

However, I believe that the findings of this project are not condemnations. Instead, they are areas of opportunity for developers to consider approaching this genre in different ways, for planners and educators to begin to better engage with what are arguably the most significant cultural objects about planning in the public eye today, and for researchers to further broaden the profession's understanding of these games, and society in general, have to say about the practice of city planning. This chapter explores those opportunities in greater detail.

Practical Considerations

City-builder games are a complex genre, and no single aspect of them can be considered in isolation. While this project has focused on the inhabitants of these games, and the role and power they have in affecting change in their communities, far more than this is being simulated at any given moment, and the player's experience does not have the same level of focus that this project has. Putting this project's findings into context provides helpful explanations for some of the results, as well as direction as to where this conversation can go next in the gaming world.

Technological limitations play a role in any piece of software, and few genres make this fact as easily understood as a city-builder game. For people alone, their information must be stored, their next actions must be chosen, the route to get through the city to the location of that action needs to be plotted out, and the impact that those actions have on several variables must be calculated and those variables updated accordingly. This level of complexity persists through businesses and industries,

houses and buildings, utilities and services, pollution and the environment, with data updating in real time. All of this happens alongside the rendering of these complex scenes, and the mixing of sounds based on where the camera is positioned. From players building new structures to developers adding a new mechanic, the complexity builds rapidly.

Where understanding this intensity of computing becomes vital is in discussing Tropico compared to the others. In all four sections of the previous chapter, Tropico was either the standout success of the four games or shared that spotlight. Much of this has to do with the issue of scale. Cities: Skylines and SimCity can both boast populations well into the hundreds of thousands, while Urban Empire can see cities surpass 50,000 residents quite comfortably. Tropico, meanwhile, is capped by default at 2,000 residents, with in-game settings only allowing that to be increased to 10,000. The trade-off for this lower headcount is the increase in complexity and detail seen in the previous chapter.

While this fact alone might make Tropico's inclusion in the sample seem unfair, it instead yields a very important question. Developers have a decision to make in designing these games, complicated and dynamic systems, or massive populations spread across a vast city. This is not unlike the decisions that city governments face in finding the most effective way to balance efficiency of decision-making with the desire for elected officials to have a close connection to the residents they represent. This project shows what there is to gain with restrained sizes and more detail, and that greater detail could likely apply to more than just public participation. However, one of the most common demands from the gaming public is for the biggest cities possible in each new game. The critical and commercial triumph of Cities: Skylines over SimCity, for example, is due in large part to Skylines' larger cities, a frequent point of praise. (Dingman, 2014; Maiberg, 2015; Starkey, 2015)

This demand for cities of ever-larger sizes brings up another important factor in contextualizing this project: these games are commercial products. While being used for educational purposes is likely

quite flattering for developers, these are games whose target audiences are not in a school computer lab when playing. This likely has three additional effects on the results of the project. One, as the market for computer games spans the globe, the importance of many of the social issues mentioned likely varies from market to market; the affordability of healthcare, for instance, might not seem like such an omission to players in countries with universal healthcare. Secondly, games released for a commercial audience still need to be fun. To include participatory actions with more intense involvement and greater authority for the public means the city, and thus the player, must give up some control or see their control overridden at times. Any gains in enjoyment and interest that comes with adding such mechanics could be cancelled out by the frustration that comes with loss of control.

Lastly, issues of representation and justice are contentious subjects in gaming, and while developers may support addressing these matters in general, actually including them in a game could risk controversy that developers or their publishers would rather avoid. But as gaming continues to mature as an art form, developers are increasingly willing to make a statement with their work, critics and customers alike are recognizing the value of such contributions, and more customers yet value realism and accuracy in simulation. Any research undertaken by developers, and any consulting with planners that they engage in, should be as focused on these issues as they are with zoning, transport, and economic development. With the gaming market becoming as crowded as it is, success often depends on differentiating a game from the rest of the genre's offerings. This project's findings suggest an opportunity to do just that.

Planners Need a Plan

Mirroring the complexity of these games is the complexity of their relationship with the planning profession. As reflected in the literature, planning instructors have been using city-builder games as educational tools for two decades, with topics covered varying broadly. The genre's use by

practicing planners and decision-makers complicates matters further, as what is needed in the classroom might not be as important in the office or at an event. To any professionals who are unsure about putting these games to use, the findings of this project might be quite alarming.

Those professionals should not let this stop them, however. The flaws of city-builder games explored here are not far from the concerns voiced by planning educators who have published work on using games in their classes. The recurring advice in the literature—using these concerns as points of discussion before and after game sessions—is shown to be even more essential to a game-inclusive lesson plan by this project. Introductory planning courses should be exciting, and these games engage students in ways that lecture cannot. Instructors should be certain to know which topics to discuss in these briefings and debriefs, and those seeking to publish work involving the use of these games in the classroom should be encouraged to write about these discussions in detail. The findings presented here should provide help in planning these conversations, to help prevent students from concluding that they "can bulldoze buildings […] without fear of opposition." (Stewart, 1989, p. 380)

Educators should also take the time to familiarize themselves with these games in advance, especially if they plan to use city-builder games extensively in class, or across multiple courses and terms. Planners outside of academia should consider doing the same as well. This means approaching them both as a planner and as a consumer, and this also means reaching beyond the SimCity or Cities: Skylines of the moment; the skill of Tropico in addressing so many of the issues covered here shows that there is a blind spot in the profession's eye towards these games. While 'playing games' may hold a trivializing connotation, the growing and diversifying consumer base behind gaming suggests that any stigma is increasingly unwarranted. These games are a part of planning discourse and playing them should be seen as no different than picking up the latest book on a planning-related topic that has managed to hit the bestsellers list.

Opportunities for Further Research

This last point brings up an interesting point: City-builder games should be treated like any other planning-related work, typically books, released for a general audience. This includes both scholarly reviews and further research. These games are a largely untapped body of work, and the number of games to explore is matched by the number of topics to investigate within each game. Further comparisons and discussions could even likely be made just with the observations taken for this project. And once more is known and documented about the contents of these games, that knowledge can be applied further.

There is room for further research simply by looking at different games, both from within and tangential to the city-builder genre. The games chosen here, after all, were picked under very specific criteria. Work could be done with games depicting other settings, whether historical, fantastical, or the work of science-fiction. Different approaches to city-builder games are generally due to who made the game and which games those developers were inspired by; looking at the evolution of the SimCity series over time or tracing other digital lineages back through the past thirty years could be informative. Of course, there are countless further topics to address instead of public participation and power. It is not hard to imagine some of these same games being evaluated for their approaches to transportation, city services, urban economics, environmental concerns, and more, as well as the more philosophical complaints that persist through the literature. Games of other genres also provide opportunities, such as the regional economies of transportation management simulators, or the urban design of modern-setting open-world games such as Watch Dogs 2 (Ubisoft Montreal, 2016) and Grand Theft Auto V (Rockstar North, 2013).

With the content of these games investigated and documented, there is great potential to take such findings further. More formal research into what students encountering city-builder games in the

classroom eternalize after playing should be performed if these games are to persist in the lesson plans of planning educators. Relatedly, surveying students to see what role, if any, prior experience with city-builder games had in choosing to enroll in planning classes or pursuing a planning major could help inform recruiting students to planning programs. Assessing how their conceptions of planning from gaming compare to what they then learn in the classroom would provide unique insight on misconceptions these games might create. More generally, surveying players who are not students of planning on how they perceive their role in their city would be a natural next step from this project, and surveys covering other topics could reveal what players internalize during gaming sessions.

The Imperative for More

City planning and gaming share a bond that has endured for over a half century. Simulation gaming helped train decision-makers as early as the 1960s, and that same decade's trend of large scale models inspired the first city-builder games in the late 1980s. Today, both planning educators and practitioners alike have found use for the games as powerful tools of engagement, no matter if the audience is a classroom of students or the attendees of a public event. Meanwhile, titles are released in the genre that reach millions of players and form perhaps the most important cultural reference point for what planning is.

In writing in scholarly literature, however, planners express many recurring concerns about the genre, even as the game in question varies from article to article. As many of the issues raised involve the simulated public of these games, their ability to participate in the decision-making process, and the handling of the social forces most affecting them, this project set out to explore these matters in detail, including a wider range of games than is typically covered in previous works.

This Critical Inventory of four sampled games addresses the themes of portrayal, what the public receive from the city, how the public can express their opinions, and the role that social dynamics

and issues play in each game. To the project's ultimate question—How city-builder games represent the public, its role in the city, and its capacity to affect change—the information gathered in the inventory yielded four answers. City-builder games offer a flawed range of options for dissent, their options for public involvement are generally weak and lacking in variety, disadvantaged groups and social issues are poorly addressed, and little is done to humanize the simulated residents in each city.

But as this chapter explores, these problems should encourage a more proactive approach to these issues on the part of both developers and planners. Planning academics should pay more attention to city-builder games, providing scholarly reviews on new titles and publishing more research that goes beyond just classroom use.

That half-century bond between planning and gaming has been successful. To get the most out of these titles, and to address the flaws within them, planners must give city-builder games the attention they deserve.

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Appendix A: Observations of SimCity

This is a written summary of the project notes for SimCity, organized according to the four themes established to guide these observations.

Presentation of People – SimCity's people are represented by simple, blocky 3D models that are of reasonable quality for being the oldest game of the four sampled. Each figure represents a specific person in the city, with consistent gender presentation, skin color, and hair color. Whenever they enter their house and leave later, they exit with a different outfit on. Models of children are smaller than models of adults. There are some specific outfits for certain occupations, such as police officers wearing blue, and homeless people always wear drab clothing in dull colors.

The player can follow any resident through their daily routine, which varies from person to person. This tracking includes as they transition to and from vehicles, which can range from mopeds and cars for private options, to whichever modes of public transport the player chooses to incorporate in their city. Like with outfits, certain occupations use special vehicles; fire trucks, police cars, garbage trucks, and construction vehicles, are all examples of this. People can also walk places if the distance is determined to be short enough, with people in ill health walking more slowly, but there are no bicycles in this game.

People can be observed performing a wide range of activities. While animations for these activities are limited, and it is difficult to tell what a person is doing at a glance, selecting a resident provides a brief description of current activities. Most people are classified as one of two types of residents: workers and shoppers. Workers are most often seen traveling to and from their job, sometimes with pay, or are seen looking for jobs or on their way to interviews. Shoppers' activities, meanwhile, are described in terms of how much money they are carrying with them and what kind of store they would like to visit. Once there, they can be seen window shopping or entering businesses.

There is a small amount of information that can be learned about each individual resident. Clicking on them, as mentioned, brings up a small panel with their name, current activity, where they last were, a button to follow them, and icons designating if they are carrying money or carrying happiness. Clicking on any home gives the name of the building—single-family homes have the last name of the family, while multi-family structures have apartment names—and comments about what is making residents happy or upset. There are also meters for land value and density, and a note about how educated the household is, if they are not uneducated.

A variety of statistics are available for learning about your population, referred to as Sims, as a whole. The standard user interface gives the current population count, as well as an iconographic face that changes color and expression based on resident approval of the player's work. Tables and graphs allow players to track data points like population change, distribution of income, unemployment for workers by income level, retail satisfaction for shoppers by income level, and enrollment counts for students. Map overlays also allow players to view the locations of their residents as the day progresses, happiness and likeliness to leave for each home, and the success of city services, such as crime maps, health data, and education level. The player's approval rating can be viewed by income level, along with a summary of the most common praises and complaints by low-, medium-, and high-income households.

What the City Does for Residents – To get anyone to come to the city at all, the player must give them a place to live. There are two things that a player needs to attract new residents: available land zoned for residential use, and demand for new residential development. While it is not transparent what drives this demand, in-game prompts generally speak of high demand in terms of the city needing more workers or more shoppers. With both factors in place, a construction truck arrives to build a home, and a moving truck arrives with the new residents.

In SimCity, the player, and their city as a result, is responsible for all basic utilities. At the most basic level, to keep recent arrivals from departing, the city needs to provide homes with electricity, water, and sewer access. People will still move in without these systems in place, but they will not remain for long. Not only are these required for the lowest level of satisfaction, but they can have substantial health effects: many power plants pollute the air, pollution can taint groundwater and cause illness, and backed up sewers can be harmful as well. While residents quickly complain about power shortages, sewage issues, and a lack of water, they seem to be unaware of the water's cleanliness.

While these utilities are the most basic needs for a city's residents in the beginning, the provision of services becomes a priority of the player soon after. Education is provided through the construction of primary, secondary, and post-secondary schools, so long as students can walk to them or take a school bus. Public safety requires the construction of police stations and fire stations, which can only serve a limited area; police stations send out patrol cars that counter the potential for crime along their routes. With sewers in place, dealing with sanitation next takes the form of garbage collection and recycling centers. The city is also responsible for the construction of medical clinics and hospitals. Most service buildings also increase the land value in their area, particularly for middle-income households. Parks and recreational spaces also drive land value, with different types of these locations appealing to different income levels. The quality and comprehensive coverage of city services is important for the happiness of residents as well. A unique feature of SimCity is that players can build multiple cities in the same region; one mechanic this enables is that cities can make contracts for buying or selling surplus capacity for any utility or service with their neighbors.

Land values and happiness play crucial roles in the development of a city. Land value dictates the income level of the residents living on that land, which has far-reaching consequences, such as with the taxes they pay or in their expectations of the city. Happiness, where development is concerned, is one of two factors that influence the density of any site: once happiness reaches certain thresholds such

that more people want to live in that location, if the roads are large enough, the site will redevelop into a higher-density location.

How Residents Respond – As mentioned before, the most basic piece of feedback from residents is through an approval rating that effects the expression and color of a face icon. In addition to having a place in the user interface for a player's overall rating, this iconography shows up in other places, such as when viewing household details or when placing a park. Players are given insight into what's causing approval ratings to change through brief complaints or praises, generally focusing on the city's amenities, services, and infrastructure. It is quite difficult to get low approval ratings, with players typically needing to deliberately sabotage their city to bring about the lowest ratings; middle- and high-income households leave before becoming too upset, and low-income households are easily pleased.

That is not to say that residents remain quiet with their comments. In addition to the praise and criticism that explain movements in happiness, thought bubbles appear above households, which give players feedback on recent actions. The thought bubbles can also give hints as to what the residents may be planning on doing soon, whether it's buying a new house or becoming a criminal, to give players insight as to how the simulated public responds to current conditions. Feedback can also come in the form of news headlines across the top of the screen, sometimes accompanied by alerts to specific crises. Occasionally, a member of the public might make a direct request of the player, setting objectives that steer players towards addressing issues in the city, such as building a new school or zoning industrial land to spur job creation. Widespread problems in the city can spark protests in front of city hall, with the reason for the protest viewable by clicking the building for more detail.

There are many factors that can cause residents to leave the city. Sustained high tax rates can lead to people abandoning homes and leaving the city, with high-income residents especially sensitive to their tax burden. Low land value drives abandonment, too, especially for medium- or high-income

residents when the value drops below the threshold needed for them to move there. High crime rates and high death rates—whether due to crime, fires, or poor health—can also drive residents out of the city. An important distinction to be made about residents leaving the city is that this is only an option for medium- and high-income residents. Low-income residents cannot leave and become homeless if forced out of their homes.

Social Dynamics and Issues – Factors like race, ethnicity, nationality, and religion, play no meaningful role in SimCity. While there is variation in skin tones from person to person, this aesthetic quality goes no further as far as game mechanics are concerned. Players can, and are encouraged, to build places of worship—choosing between churches, mosques, eastern temples, and new-age temples—Sims seem to have no preference between them, suggesting it is only an architectural choice. The player is given no idea as to where new residents come from, so there is no real sense of nationality and home countries.

Where SimCity has a lot to demonstrate about this theme, however, is in wealth and income, a factor that cuts through many aspects of the game. Based on the land value of their home, every Sim in the city is considered low-, medium-, or high-income. People of different income levels shop at different stores. For example, low-income Sims frequent fast food restaurants, thrift shops, and discount stores with barred windows, while avoiding coffee shops, jewelry stores, and financial planners. Income levels also drive what parks and recreational spaces people go to; the parks, in turn, are major factors in land value and, thus, income levels of people nearby. High-income residents prefer statues, art installations, and amphitheaters, middle-income residents like sports fields and tree-lined jogging paths, and low-income residents get playgrounds and vacant lots.

Having access to shops and parks of the right income level is vital to ensuring the happiness of households. Visitors to parks and other locations like places of worship are given happiness, which they

then carry back to their homes, adding to the whole household. After workers have brought money home, shopper Sims carry that money out to stores of their income level and, in the game's own words, spend that money to buy happiness. Low-income Sims who cannot afford to buy happiness can get it for free at public libraries, if they have been built.

SimCity places only subtle connections between income and education, but like with the former, education shows up in several the game's systems. Education does not determine the income level of a Sim, nor does their income level impact access to or achievement in school. The only correlation is the boost to land value that comes with being near a school. However, uneducated people waste electricity and water, are more likely to start their homes on fire, and are more likely to get sick. The opposite is true for educated Sims, with the best-educated university graduates also the necessary factor to attract high-tech industry to the city. A lack of education also drives criminal activity.

Crime is a very detailed system in the game. As the game explains, all criminals start as kids who lack access to school, whether through distance or the district having ran out of room for more students. Starting out with minor crimes, such as shoplifting, success pushes criminals to attempt more severe crimes, such as robbery and mugging, and then up to arson and murder. Being caught by police leads to criminals being put in jail; at the end of their sentence, they are rehabilitated from their life of crime and released. Overcrowding in jails lessens the success of this process, with criminals being let out early. Criminal encounters with the police can turn into shootouts and car chases.

Other societal issues show up to a lesser degree, if at all. Low-income people who are forced from their house, whether due to damage or inability to pay rent, become homeless. Homeless people wear drab clothing, and spend their time either looking for garbage to sift through for food, or abandoned buildings and parks to sleep in. They eventually leave the city, but do so faster if the city has a bus terminal. Health and healthcare play a role in the game, but aside from potentially-fatal illnesses

and injuries if left untreated, there's no issue of access and affordability. Other concerns, such as access to food, are non-existent in this game.

Appendix B: Observations of Cities: Skylines

This is a written summary of the project notes for Cities: Skylines, organized according to the four themes established to guide these observations.

Presentation of People – Visually, the people in Cities: Skylines are simple 3D models whose exact level of detail is difficult to discern, as the camera does not allow players to zoom in closely. Every resident of the city is presented consistently in the short-term, with the same gender, hair color, and skin color. However, people in Skylines age over time, which changes the size of their model and their manner of dress.

Each resident can be followed as they move about the city, going through their routine. This includes a decent amount of detail: vehicles are parked appropriately, people walk in and out of doors, bicyclists use bike lanes where possible and can be seen pedaling, families can be seen in back yards and some park visitors sit down on benches and at picnic tables. Modes of transport used by people in Skylines' cities include walking—sometimes with a pet dog—short distances, bicycling, mopeds, public transport, and private automobile. People can own vehicles in a wide range of styles and colors.

Clicking on any person brings up a small informational panel. By way of biographical details, the person's name, education level, age group, home, place of employment of education, and current activity, is listed. In addition, there is an iconographic face that changes expression and color as a basic measure of happiness and satisfaction of that resident. Two buttons are also included, one to follow the person, and the other to map out the route they are taking to their destination.

Additional information can be inferred about people through observation. While families are not explicitly stated, they are implied through multiple people with the same last name living in the same home. However, due to scaling issues—to allow for high-population cities to run well on a computer, multiple families live in each household to cut down on the number of buildings—the home the family

lives in is not always labeled with their family's name. As mentioned, some families do have pet dogs, and some also own multiple vehicles.

Population-level statistics are rather minimal. The main user interface includes an iconographic face representing the average happiness of all residents, as well as a counter for population and the weekly rate of change. Although they are not readily accessible, several line graphs are available, including population counts, happiness rating, birth and death rates, employment and education quality, and counts of students, bicyclists, and prisoners. Map overlays are easier to access, with the datasets available including happiness, education, health, crime, land value, leisure options, and more. Players can create districts to divide up their city for targeting policies to certain parts of the city; district-level population, happiness, and age information is available, too.

What the City Does for Residents – The process of attracting residents to the city is similar to that of SimCity. With residential demand and vacant land zoned for residential use, houses build themselves up out of the ground, and families arrive in their personal vehicles to move in. With residential demand low and commercial and industrial demand high, any additional land zoned for new homes will sit vacant until conditions change.

In Skylines, the player's city is the provider of basic utilities. Power plants and transmission lines need to be built, and water pumps and drains must be placed at either end of a sewer system. Houses can still be built, and new residents can still move in, before electricity and water are available, but those homes will be quickly vacated without both. Different power plants emit different levels of pollution and noise, water towers need to be situated on clean land, and water pumps on shorelines need to be placed upstream from sewer drainage, to avoid distributing polluted water.

Several public services fall under the player's purview, too. Education is provided at the primary, secondary, and post-secondary level, with catchment areas determined by road distance from the

school as well as its funding level. Public safety works the same way, with police stations and fire stations dependent on road distances and budget allocation. The same can be said for healthcare, with the city responsible for the placement of clinics and hospitals, and budget levels determining the number of ambulances available. Medical concerns in this game encompass the entire lifecycle, too: the player must also provide adequate graveyard space or crematoriums. Trash collection's range is limited by road distance from dumps and recycling centers, with budget levels determining the number of trucks to be deployed. City parts and recreational areas are an exception to this, with all homes within a given radius—controlled via budget levels—receiving a bonus to happiness.

Housing can be improved under the right conditions, with redevelopment leading to nicer homes that house more families, another quirk of the scaling for improved performance in running the game. There are three conditions that trigger these improvements. All pressing issues with the household, such as high taxes or too much community noise, must be resolved. After that, land value needs to reach a certain threshold, and the residents of the home need to be better educated. While the player can eventually zone for high-density residential development, that is on a different scale of improvement with the same requirements.

How Residents Respond – The most basic way that the residents of Cities: Skylines express their opinions is with an iconographic face. Like with SimCity, the expression changes from a frown to a smile depending on how happy they are about the player's work, with the color shifting from red to green. These faces can also be viewed at a household level, the district level, or for the entire population, as well. A line graph is available that shows happiness as a percentage, with its fluctuations over time. However, there is no information as to what is specifically causing happiness levels to be where they are.

More specific pieces of feedback are available, but not in abundance. Speech bubbles with an icon representing some aspect of the city appear over a household when a crisis is arising, such as severe illness, or they have a complaint to make, like when taxes are too high. Many of these complaints have a standard version and a more-severe version that appears when the situation is bad enough that they are considering leaving the city. Besides this, the only voicing of opinion comes in the form of a Twitter-style comment feed called Chirper, with each post coming from the city's residents. While many of these can be praises for recent actions or warnings of potential problems, some of them are only included for amusement. The game does have simulated radio stations, including advertisements for businesses seen in the game, but there is no content in response to the city and the player.

When the situation becomes bad enough, any resident can leave the city at any time. Sometimes, they can be seen getting in their vehicles and driving away, but in most cases, they simply vanish. Either way, they leave an abandoned home behind. Reasons for leaving include a lack of electricity or water, low land value, high taxes, high crime rates, and poor health. In many cases, widespread abandoning seems to be a reduction in demand, rather than a response to bad conditions. No matter why the previous occupants left, new families will often move in soon after, and the cycle of abandonment and new occupancy continues until there is an equilibrium between those leaving and those arriving.

Social Dynamics and Issues – This theme has relatively little showing in Cities: Skylines. Education levels dictate which jobs the city's residents are qualified for, with high-tech industry and corporate offices only able to function with a suitable workforce available. Education also combines with land values to let homes redevelop to be nicer in appearance and to hold more families. Both health and crime are abstracted, with households being marked as having sick people instead of specific people falling ill, and lack of police presence letting crime rates rise unimpeded until households begin to complain of it.

What is most noteworthy in this theme for Cities: Skylines is not what is included, but what is missing. While education and land value seem to be serving as a partial proxy, not only do income and wealth play no role in the game's mechanics, there is no data on economic class at all. This is in addition to lacking any presence of race, ethnicity, origins, and religion. It is also impossible for any resident to become homeless; everyone can leave the city at any time, only arrive when there is a house for them, and disappear if that house is destroyed.

Skylines does set itself apart from SimCity in this theme by giving players a selection of ordinances, tax incentives, and policies to implement citywide or on a district level. Nearly all of them are adjustments to the functions, quality, and costs, of city services and amenities, having little more impact on a city beyond tweaking a few variables. However, no matter the impact, the names and descriptions of many of the options are at least evocative of larger societal concerns, and how planners might address them. Through these policies, players can make decisions such as allowing recreational marijuana use, declaring parts of the city historic and closed to outside traffic, implementing NIMBY laws against noisy nightlife venues, or banning cigarette smoking. Again, these choices do little more than making small adjustments to the game—allowing marijuana, for instance, gives a bonus to tourism and a small decrease in crime, but makes policing more expensive overall—but their presence can still be thought-provoking.

Appendix C: Observations of Tropico 5

This is a written summary of the project notes for Tropico 5, organized according to the four themes established to guide these observations.

Presentation of People - While Urban Empire reaches populations well into the tens of thousands, and SimCity and Cities: Skylines can get into the hundreds of thousands and beyond, Tropico's default population limit is two thousand, and can only be increased as high as ten thousand. In exchange for working with fewer people, the game makes up for it with incredible detail. Every resident has a fairly detailed model, which varies in hair style, hair color, skin tone, and gender, from person to person. Children are smaller than typical models and have their own unique outfits and looks. All these details remain consistent for each model. Clothing is elaborate, with each occupation in the game having unique outfits that those holding that job wear throughout the day, such as soldiers wearing Kevlar vests and helmets, and farmers wearing rugged button-up shirts and jeans.

Players are able to follow their residents through a complex daily routine, with people moving from home to work and back, and often stopping at restaurants, bars, grocery stores, churches, medical clinics, and more, along the way. If one of these buildings has an outdoor area, such as patio seating at a restaurant or loading docks for the teams or fields and orchards for farms, employees and visitors can be seen performing whatever task or activity they are there to do. By default, everybody walks between destinations, but the player can install parking garages for automobile access, and subway stations for public transport.

Clicking on any person brings up a three-tab information window for them. The first tab is the basic information section, which lists name, age, home country, education level, location of residence, job and workplace, wealth level, and approval rating towards the player. This also features a family tree, showing a resident's spouse, both people's parents, and any children they may have. This is also where

the player can order actions to be taken against the selected resident, such as bribing them or having them arrested. The second tab is for the person's happiness, detailing their overall contentment and the category scores that the overall value is based on, as well as their political views; happiness and politics will be explored later in this section. The third tab, thoughts, is just a list of recent thoughts the resident has had, as well as a brief description of what triggered that thought, such as 'low food' or 'good job'.

As far as summary statistics for the player's Tropicans, as the residents are called, the game provides a wide range of counts, tables, lists, and graphs, in what is described as an almanac. Information about residents includes an overall happiness rating, scores for each happiness category, and the opinions and voter counts for each of the eight political factions. Also provided are population counts for employed and unemployed workers, students, people not in the labor force, retirees, homeless people, homeless families, and counts for immigrants, emigrants, native births, and deaths. Further information is provided for education levels, income levels, age groups, and more.

What the City Does for Residents – Compared to the other city-builder games in this sample, attracting new residents to a city in Tropico works differently. Many factors influence immigration, ranging from available jobs and housing to overall quality of life compared to the rest of the region. None of these factors are absolutely necessary, however, which means that people will arrive regardless if there is room for them to live and work, and they will not always leave if the player fails to accommodate them.

Tropico 5 stands out for not sticking to the traditional routine of managing utilities and services to keep residents satisfied. Instead, there are eight categories of needs and desires, with each person having a rating for how well each category is being met, which forms one overall happiness score. The eight categories are crime safety, entertainment, food, healthcare, housing, job, liberty, and religion. Each rating is based on what buildings are accessible, what policies are in place, and various other

settings. For example, liberty is penalized by a heavy police presence, bolstered by media outlets, and impacted by policies like sensitivity training for law enforcement and laws in favor of independent media. As this is based on a model of satisfying needs rather than providing service, Tropicans are willing to go without satisfying some categories so long as others are being met particularly well. High wages and quality entertainment, for instance, makes poor housing more bearable. Even things treated as absolute essentials in other city-builder games, such as a power grid or police protection, can be ignored in the right conditions. Some categories have additional consequences if left unaddressed, however. For instance, people can be happy without healthcare, but they're still susceptible to premature death.

Given that the government in Tropico defaults to state control over almost every aspect of the island and the lives of its inhabitants, the player is responsible for nearly every factor that impacts happiness. In addition to typical service buildings seen in other games, the player selects and places every home and every workplace. Zoning for residential land use is replaced by choosing and placing tenements, apartments, bunkhouses, single-family houses, and more. Commercial and industrial buildings are selected specifically, too, with most commercial buildings facilitating the happiness of residents, and industrial buildings utilizing natural resources and forming supply chains. Most income for the government comes from the resulting exports.

How Residents Respond – Tropico 5 has two basic measures of public opinion of the player's work. The first, as discussed, is happiness, which is an aggregate score based on eight categories of want and need for each individual. Happiness is important, but the primary objective in Tropico is to stay in power, no matter what needs to be done to ensure it, so the second number of concern is the player's approval rating. The two drivers of approval are happiness and how well the player's actions and decisions align with a resident's political beliefs.

Approval rating becomes important when it is time to hold elections in Tropico, as that number represents the percentage of the voting population who would reelect the player to another term. The game gives players room the maneuver if elections become a threat to remaining in office. This can take the form of innocent actions like a surprise tax rebate, clandestine actions such as rigging the vote, or more overt actions such as banning elections or declaring martial law.

Winning over the approval of factions is crucial to remaining in power, but it is, by design, very difficult to please everyone. The eight factions are split into four pairs, with each pair in opposition to each other and often making mutually exclusive demands. The four pairs are the Values pair, split into Militarists and Religious; the Economy pair, split into Communists and Capitalists; the Environment pair, split into Environmentalists and Industrialists; and the State Power pair, comprised of Nationalists and Globalists. Each resident has an opinion on each pair, either remaining neutral or taking a weak or strong stance towards one over the other. An unhappy Tropican may still vote for the player so long as the factions they feel strongly aligned with support the player. This is complicated further by the fact that the player's opponent in an election is always a faction leader, which makes it difficult to attract any votes from the faction's supporters. The player has options in influencing factions, receiving a temporary boost in opinion from a faction for bribing its leader, and implementing various policies that steer Tropicans towards certain factions over time.

Just as the player does not have to be content with elections alone, neither do the city's residents. Dissatisfied Tropicans will frequently start protests in the streets, with the player having the option to send in security forces to break it up, pay the protesters to stand down, or to negotiate with them and receive an objective from them to complete. If the situation worsens, Tropicans can instead form angry mobs, who try to damage various buildings before attempting to storm the presidential palace. Some Tropicans may also join a hidden rebellion if they are upset enough, and the military might attempt a coup if they specifically are unhappy.

While there is plenty of data to work with to gauge the mood of the public, there is little in the way of specific guidance. Occasionally, members of the public or the president's advisors will provide missions for the player to resolve, but just as many of these missions come from foreign ambassadors and representatives. There are occasional newsbreaks in the radio broadcast that provides the game's soundtrack, but they are canned responses to specific actions and events.

Social Dynamics and Issues – While race-related matters do not show up in Tropico 5, the game otherwise manages to touch on a broad range of social, economic, and cultural topics. Given that the player's island is both a city and an independent nation, immigration is an important factor to consider in the growth of the city. The information panels for all residents include their country of birth, whether they are native-born in Tropico or came from elsewhere. The player is also able to set an immigration policy, which can favor letting anyone in, letting skilled workers in, or locking down the borders to minimize both immigration and emigration. The player's choice on this topic can be a point of praise or criticism from the Nationalist faction.

While there are no tensions between multiple faiths, religion is a topic included in Tropico 5. Residents of the island count religion as one of their eight categories of want and need, with players building churches to accommodate this. Given that one of the late-game achievements a play can work towards is a visit to Tropico by the Pope, the religion in the game is likely Roman Catholicism, which fits the Caribbean island setting. Supporting the church's role in the city is the Religious faction, who support policies such as contraception bans and the prohibition of alcohol and oppose policies like the legalization of same sex marriage and approving stem cell research.

Economic status plays an interesting role in this game, considering how much control the player has over the economy. The budget level set for each building helps determine the wages for workers, the cost of renting homes, and more. By default, food and healthcare are free, but residents need to be

able to afford recreation and activities, let alone affording rent itself. This means that people will not starve or die from lack of medical treatment simply because they could not afford to take care of such needs, but they are liable to end up homeless and miserable. Homeless people will quickly build themselves a crude shack to live in, located near their place of employment if they have a job. With homeless becoming enough of an issue, a common sight in the city are clusters of shacks wherever enough empty space can be found. Among the policies the game offers players are options to subsidize housing and make it more affordable, or to provide pensions to retirees so they can still take care of themselves.

Other similar factors play a major role in the game, too. Different jobs require different levels of education—a farmer needs less schooling than a nuclear power plant technician, for example—and players can build the facilities needed to produce high school and college graduates out of the nation's young people. In the event of a shortage of skilled labor, the government can pay increasing sums of money to recruit foreign workers to come to the island on the next ship out, with better-educated workers costing much more. The education level required of a job means a lot to the worker, as the jobs that require more education pay considerably more than jobs that do not.

Providing many services and amenities to Tropicans is not just about building the facilities and staffing them well: access plays a critical role. The game simulates workers going through their day over a fixed amount of time, not only needing to get to their job, but also robbing them of the time to visit their doctor or enjoy themselves on a nature walk. If their home and their workplace are far apart, they may spend most of the day just traveling to work, only to turn around and return home because they arrived at the end of their shift. This lack of spare time limits the ability of Tropicans to meet many of their own needs. An interesting component of this is that residents need to go food shopping which, by default, sees them going to farms and ranches to pick up groceries, which can them far out of their way. To remedy this, players can build grocery stores in more convenient locations, which collects food from

the island's farms and sells it to nearby residents. This means that the game goes as far as to simulate food systems within the city.

Appendix D: Observations of Urban Empire –

This is a written summary of the project notes for Urban Empire, organized according to the four themes established to guide these observations.

Presentation of People – Despite being the newest game of the four, Urban Empire also has the most simplistic graphics of the four titles, when it comes to visually portraying its people. There is some variation in outfits and apparent gender, but with how little detail there is to the models and how restrictive the camera is with zooming in, little more can be said about the appearance of the models.

Observing the people in action shows that same lack of detail. People and cars both appear at random and begin walking or driving aimlessly through the town, often circling the same city block multiple times, before vanishing again. The animations are minimal, too, with entire groups of people walking in lockstep despite being several blocks away from each other. This is the only way the player ever sees the people of their city. There is nothing to be said about what can be learned by clicking on anyone, since the game does not allow this. Pedestrian and vehicle traffic in this game only exists as decoration, nothing more.

Where this game becomes interesting for this theme is in the group and population data that is available. The narrowest group that data is available for is at a building level, whether that building is a single-family home or a high-rise apartment building. Selecting any residential building brings up a window that provides a happiness rating, as well as ratings in the six different Wheel of Life factors that aggregate to the happiness rating. Following that is a count of the people living in that building, presented in total and further broken down into social class and employment status. Below that is the current voting preferences for that building's references between the active political parties. This same data can be viewed at the district level, too.

Even more data is available at a citywide level, for players who want to learn more about their Swarelians, the nationality of the city's residents and how the game refers to them collectively. The main user interface offers total population, as well as the Wheel of Life scores and the happiness rating they add up to. The city data button brings up a window that details population counts, political leanings, average salaries, tax revenue collected, and employment rates, for each social class, and often for each age group, too.

What the City Does for Residents – Bringing residents into the city follows a process that might feel familiar after having looked at other city-builder games, but the unique way that Urban Empire handles development provides some important differences. Much like with SimCity or Cities: Skylines, residential development requires two components: residential demand, and vacant land zoned accordingly. Though rather than placing roads manually and selecting plots of land to be designated for each land use, Urban Empire forces players to plan entire districts at once. Expanding in small increments is unfeasible here. Once a new or redesigned district has been approved, new homes rise out of the ground with residents already inside.

Much like with Tropico 5, Urban Empire approaches providing for the city's inhabitants through a system of meeting wants and needs, rather than a system of providing services and utilities. Overall happiness is calculated from six factors the game refers to collectively as the Wheel of Life: Social Life, Security, Physical Environment, Health, Personal Growth, and Fun. Also, like Tropico, residents are okay with living with one of their Wheel of Life scores low, so long as the others are high enough that they are happy overall.

The player has a few different ways to approach managing the Wheel of Life scores. While placing civic buildings and funding them well does much to address these factors, further adjustment comes from amenities provided to the district and the policies and laws of the city. While building a

medical clinic, for example, improves the health of residents, so does approving an advertising campaign promoting dental hygiene. While the former might be more effective, the latter might be much more affordable, and much easier to get approved by city council, and still be effective enough to do what was needed. As policies and laws are passed over time, many of them improve a Wheel of Life score while also raising the public's expectations for that score. This has a net result of making previous actions less impactful as societal norms shift over time.

How Residents Respond – While the Wheel of Life scores and the overall happiness rating derived from them provide the most general feedback from residents, it is Urban Empire's signature system that provides the most important consequences. Every six years, the residents vote in elections for the 61-seat city council, with seats distributed among the different parties according to proportionate representation. Voting preferences of the city's populace shift based on which party is championing their biggest concerns, and which party has had flattering press or been on the right side of emerging events. Enacting or repealing laws and policies, constructing service buildings and adjusting their funding, and creating new or changing existing districts, all go to vote before the council. Occasionally, the council will propose legislation of its own.

Much of the game's action comes from interactions with the council. The player can use accumulated goodwill with the parties to persuade them, and the parties attempt to sway each other as well. Each party has its own political leanings, signature policies to push through that term, and relationships with the other parties. Remaining on good terms with the parties is important, as every six years, the council votes on whether to keep the player in office. Losing this vote means losing the game.

While players have minimal interaction with individual members of the public, that does not mean they never hear from them. The front page of the city newspaper appears on screen as needed to announce election results and major events impacting the city and the world around it. Random events

can arise, too, forcing the player to decide in how to react. While these events can often be about interactions with the council's parties, some do come up that involve the public. The text of the event will describe the concerns of residents, questions from the media, controversies the player-mayor is expected to take a stance on, and occasionally something as benign as choosing an architecture style for a train station or a stature for a park. All these selections can have consequences with the public, too. For instance, making a traditionalist choice for the train station's design can push voters towards more conservative parties.

Social Dynamics and Issues – Given the scope of the game, covering a single city from the Industrial Revolution through to today, Urban Empire goes to great lengths to capture not just technological change, but societal change as well. The player's imperial mandate fades as democratic power grows and the people gain the right to vote the player out via their elected representatives. That voting power spreads from an elite few to everyone, regardless of gender or class. Services and amenities that many other city-builder games take for granted, from electricity and plumbing to parks and police stations, have their moments as the novel changes they once were.

Social class and gender play prominent roles in the game. Aside from students, the game divides all residents into one of four social classes: elite, middle, working, and lower. They all have different average earnings, and different industries hire different mixes of employees from each class; as a result, conditions that benefit or hamper certain industries can have disproportionate effects on certain segments of the population. Laws and policies also affect classes differently, such as how a loitering law lowers the Fun of lower class residents in exchange for a smaller bonus to Safety for everyone else. Gender also plays a role in laws and policies, such as how mandating paternity leave gives a bonus to Personal Growth for women, and a bonus to Social Life for men.

The push for civil rights for different groups also features over the course of the game. Workers gain the right to unionize, and advocate for eight-hour workdays and better working conditions. Women start out not being legally allowed to own property or vote and can end up with legally-mandated equal pay later on in the game. LGBT residents go from being seen as mentally ill to having legal protection against discrimination. While these issues feature as little more than statistical adjustments in the game and the occasional newspaper headline, the game is unique in addressing issues such as this. It does miss some issues: religion plays a token role in the game, and race and immigration do not feature at all.